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# TRANSCRIPT OF RECORD.

## SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1889.

Nos. 380 and 558. 86 255

No. 380.—WILLIAM H. ROBERTSON, COLLECTOR OF THE PORT OF NEW YORK, PLAINTIFF IN ERROR, vs. OSWALD OELSCHLAEGER.

**Filed August 25, 1887.**

No. 558.—OSWALD OELSCHLAEGER, PLAINTIFF IN ERROR, vs. WILLIAM H. ROBERTSON, COLLECTOR OF THE PORT OF NEW YORK.

**Filed October 18, 1887.**

IN ERROR TO THE CIRCUIT COURT OF THE UNITED STATES FOR THE SOUTHERN DISTRICT OF NEW YORK.

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1 UNITED STATES OF AMERICA, *ss:*

The President of the United States to the judges of the circuit court of the United States for the southern district of New York, greeting:

Because in the records and proceedings, and also in the rendition of the judgment of a plea which is in the said circuit court before you, between Oswald Oelschlaeger, plaintiff, and William H. Robertson, defendant, a manifest error hath happened to the great damage of the said William H. Robertson, as by his complaint appears, we being willing that the error, if any hath been, should be duly corrected, and full and speedy justice done to the party aforesaid in this behalf, do command you, if judgment be therein given, that under your seal, distinctly and openly, you send the record and proceedings aforesaid, with all things concerning the same, to the Supreme Court of the United States, together with this writ, so that you may have the same at Washington on the second Monday of October, eighteen hundred and eighty-seven, in the said Supreme Court, to be then and there held, that the record and proceedings aforesaid being inspected, the said Supreme Court may cause further to be done thereon to correct that error what of right and according to the laws and customs of the United States should be done.

Witness the honorable Morrison R. Waite, Chief-Justice of the said Supreme Court, the 6th day of June, in the year of our Lord one thousand eight hundred and eighty-seven.

TIMOTHY GRIFFITH,
*Clerk.*

The foregoing writ is hereby allowed.

WM. J. WALLACE.

2 (Indorsed:) 9677. U. S. Supreme Court. William H. Robertson, plaintiff in error, against Oswald Oelschlaeger, defendant in error. Writ of error. Stephen A. Walker, attorney for plaintiff in error. Due service of a copy of the within writ of error is hereby admitted this 7 day of June, 1887. Charles Curie, attorney for def't in error.

(Stamp:) U. S. circuit court, Jun' 7, 1887, Timothy Griffith, clerk.

UNITED STATES OF AMERICA,
*Southern District of New York, ss:*

I, Timothy Griffith, clerk of the circuit court of the United States of America for the southern district of New York, in the second
3 circuit, by virtue of the foregoing writ of error, and in obedience thereto, do hereby certify that the following pages, numbered from four to fifty-eight inclusive, contain a true and complete transcript of the record and proceedings had in said court in the case of William H. Robertson, plaintiff in error, against Oswald Oelschlaeger, defendant in error, as the same remain of record and on file in said office.

In testimony whereof, I have caused the seal of the said court to be hereunto affixed, at the city of New York, in the southern district of New York, in the second circuit, this twelfth day of August, in the year of our Lord one thousand eight hundred and eighty-seven, and of the Independence of the United States the one hundred and twelfth.

TIMOTHY GRIFFITH, *Clerk.*

4 *Summons No. 1.*

Superior court of the city of New York.

OSWALD OELSCHLAEGER, PLAINTIFF,
*against*
WILLIAM H. ROBERTSON, DEFENDANT.

To the above-named defendant:

You are hereby summoned to answer the complaint in this action, and to serve a copy of your answer on the plaintiff's attorney within twenty days after the service of this summons, exclusive of the day of service, and in case of your failure to appear or answer, judgment will be taken against you by default for the relief demanded in the complaint.

Dated, New York, April 1, 1885.

CHAS. CURIE,
*Plaintiff Attorney,*
*Office, No. 44 Exchange Place, New York City.*

5 (Indorsed:) No. 1. N. Y. superior court. Oswald Oelschlaeger, plaintiff, against William H. Robertson, defendant. Summons. Plaintiff attorney, 44 Exchange Place, New York City. Due service hereof admitted this 1st day of Ap'l, 1885.

6 1. *Notice of appearance and demand.*

N. Y. superior court.

OSWALD OELSCHLAEGER,
*vs.*
WILLIAM H. ROBERTSON.

You will please take notice that I am retained by and appear as attorney for the defendant in this action, and demand service of a bill of particulars of the plaintiff's claim herein, and a copy of the complaint and all papers in this action upon me, at my office in the United States court and post-office building in the city of New York.

Yours,

ELIHU ROOT,
*United States Attorney, Attorney for Defendant.*

NEW YORK, *Ap'l 13th*, 1885.

To C. CURIE, Esq.,
*Attorney for Plaintiff.*

7 ("Endorsed:") N. Y. superior court. Oswald Oelschlaeger vs. William H. Robertson. Notice of appearance. Elihu Root, United States attorney, attorney for defendant. To C. Curie, plaintiff's attorney.

8 *Complaint.*

Circuit court of the United States for the southern district of New York.

OSWALD OELSCHLAEGER, PLAINTIFF,
*against*
WILLIAM H. ROBERTSON, DEFENDANT.

Plaintiff complains:

1st. That defendant was, during the time hereinafter named, collector of customs of the United States at the port of New York.

2d. That plaintiff was, during said times, in trade, under the firm name of Oelschlaeger Bros., and, as such, duly imported and entered at the port of New York the goods described in the bill of particulars annexed.

3d. The defendant, as such collector, exacted from plaintiff as and for duties thereon, and plaintiff in order to obtain said goods was compelled to pay and did pay, the sum of four hundred & ninety $\frac{46}{100}$ dollars in excess of the amount required by law.

4th. That plaintiff filed with said defendant due and timely protests, in writing, upon each entry of said goods against his decision exacting such duty, setting forth distinctly and specifically the grounds of objection thereto, and also as above stated.

5th. That plaintiff made due and timely appeals in each case to the Secretary of the Treasury, who has affirmed the decision of defendant as to certain of said entries, and as to the rest of said entries has neglected to answer said appeals, and more than ninety days had elapsed since said unanswered appeals when this action was commenced.

6th. That the bill of particulars, hereto annexed, states for each importation separately the date of entry at the custom house, of the payment of duty in excess, of the filing of the said protests, of the appeal to the Secretary of the Treasury, and of his decision thereon, together with the other particulars required by law, and is made a part hereof.

7th. That said sum, so exacted, as aforesaid, has never been repaid to plaintiff, and is still due and owing to him.

Wherefore, plaintiff demands judgment against defendant for four hundred & ninety $\frac{46}{100}$ dollars, with interest on the several sums named in the bill of particulars, from the several dates of payment as appear thereby, together with the costs and disbursements of this action.

CHAS. CURIE,
*Attorney for Plaintiff.*

9 (Indorsed:) 9677. U. S. circuit court. Oswald Oelschlaeger, plaintiff, against William H. Robertson, defendant. Complaint. Chas. Curie, plaintiff's attorney, 44 Exchange Place, New York City. Due service of a copy hereof admitted, this 13th day of May, 1885. Elihu Root, U. S. attorney, att'y for deft.

10 *Bill of particulars.*

[Name of importer: Oelschlaeger Bros. Description of goods: Philosophical instruments.]

| Where imported. | Name of vessel. | Date of invoice. | Date of entry at custom-house. | Amount of duty illegally exacted. | Date of payment of duties in excess. | Protest filed. | Date of appeal to Secretary of the Treasury. | Date of Secretary's decision. |
|---|---|---|---|---|---|---|---|---|
| | | 1883. | 1884. | | 1884. | 1884. | 1884. | 1885. |
| London | Holland | Dec. 24 / 1884. / Jan. 14 | Feb. 7 | 115.97 | Feb. 7 | Mar. 28. | Mar. 28 | Jan. 8 |
| Bremen | Neckar | " 16 | " 13 | 30.70 | " 13 | Apr. 17 | Apr. 17 | " 8 |
| Havre | Normandie | June 2 | June 17 | 20.18 | June 17 | June 5 | June 5 | " 8 |
| " | Canada | " 28 | July 10 | 37.75 | July 10 | July 14 | July 14 | " 8 |
| " | St. Laurent | July 8 | " 24 | 23.81 | " 24 | Aug. 11 | Aug. 11 | " 8 |
| " | Amerique | Aug. 5 | Aug. 20 | 39.64 | Aug. 20 | " 23 | " 23 | " 8 |
| " | Labrador | July 24 | " 7 | 82.75 | " 7 | " 12 | " 12 | " 8 |
| Liverpool | Adriatic | Aug. 8 | " 25 | 10.66 | " 25 | Oct. 2 | Oct. " | " 8 |
| Havre | Labrador | " 28 | Sept. 11 | 43.92 | Sept. 11 | " 2 | " " | " 8 |
| " | St. Germain | Sept. 5 | " 25 | 26.19 | " 25 | " 2 | " " | " 8 |
| Bremen | Rhein | Aug. 26 | " 18 | 22.04 | " 18 | " 2 | " " | " 8 |
| Havre | Canada | " 30 | " 18 | 36.85 | " 18 | " 2 | " " | Feb. 4 |
| | | | | 490.46 | | | | |

11 (Indorsed:) 9677. U. S. circuit court, southern district of New York. Oswald Oelschlaeger against W. H. Robertson. Bill of particulars.

NEW YORK, *May* 13, 1885.

To ELIHU ROOT, esquire,
*Defendant's Attorney:*

SIR: Please to take notice that this action is brought to recover duties illegally exacted by the defendant as collector of customs at the port of New York, and the within is the plaintiff's bill of particulars..

CHAS. CURIE,
*Plaintiff's Attorney*, 44 *Exchange Place, New York City.*

Due service hereof admitted this 15 day of May, 1885.

ELIHU ROOT,
*Defendant's Attorney.*

12 The President of the United States of America to the judges of the superior court of the city of New York, greeting:

[L. S.] We, for certain reasons, being desirous that our circuit court of the United States, for the sourthern district of New York, in the second circuit, shall be certified of a certain cause, commenced before you against William H. Robertson, defendant, by Oswald Oelschlaeger, plaintiffs, do therefore command you that the records and proceedings in the said cause you distinctly and openly send to the said circuit court at the city of New York, on the 23d day of April, 1885, as fully and amply as the same are remaining before you, by whatever names the said parties may be called therein, together with this writ, that our

said court may cause to be further done thereupon what of right ought to be done.

Witness, Morrison R. Waite, esquire, Chief-Justice of the Supreme Court of the United States, the 18th day of April, in the year one thousand eight hundred and eighty-five.

TIMOTHY GRIFFITH,
*Clerk.*

ELIHU ROOT,
*United States Attorney, Attorney for Defendant.*

13 I have this day personally served upon the clerk of the ——— court of the ——— New York, a duplicate of the within writ, at the same time showing the original.

———— ————,
*U. S. Marshal.*

Dated ———, 188 .

(Indorsed:) 9677. U. S. circuit court. O. Oelschlaeger *versus* William H. Robertson. Certiorari. Elihu Root, United States attorney, attorney for defendant:

To C. CURIE, esq.,
*Pl'ff's Att'y:*

Take notice that the within is a copy of a certiorari this day issued out of the circuit court of the United States for the southern district of New York. New York, Ap'l 18, 1885.

Y'rs,

ELIHU ROOT,
*U. S. Attorney, Att'y for Deft.*

14 Circuit court of the United States for the southern district of New York.

OSWALD OELSCHLAGER )
*v.* }
WILLIAM H. ROBERTSON, COLLECTOR, &C. )

The defendant answers to the complaint as follows:

I. He denies that the true duty or that the true and lawful rate of duty on the goods referred to in the complaint was as stated in the complaint, and he denies that the plaintiff was compelled to pay or did pay defendant as collector or otherwise the sum stated in the complaint or any sum in excess of the amount required by law as duties upon the said goods, or that any sum of money unauthorized by law was exacted as duties on said goods or otherwise.

II. He denies that the plaintiff filed with defendant any protest
15 or protests in writing in which the grounds of objection to this exaction of duties on said goods were distinctly and specifically stated.

III. He denies that the sum stated in the complaint or any sum is now due and owing to the plaintiff.

IV. He denies that he has any knowledge or information sufficient to form a belief as to whether the goods alleged in the complaint to have

been imported, at the times therein mentioned were in fact such goods as are described in the said complaint.

V. And further answering, defendant alleges that all moneys received by him from the plaintiff in respect of the importations in the complaint alleged to have been made, were demanded of plaintiff and were by plaintiff voluntarily paid to him in his capacity as collector of cus-
16 toms, as and for duties due the United States on imported merchandise, and were forthwith before the commencement of this action and before the receipt by defendant of any protest or objection on the part of the plaintiff paid over by defendant in his official capacity aforesaid to the United States and placed beyond his control.

VI. And further answering, defendant alleges that all moneys received by him for the plaintiff in respect of the importations in the complaint alleged to have been made were sums due from plaintiff to the United States as duties, according to the rate of duty imposed by law upon articles of merchandise imported by plaintiff and assessed with duty, and no other sums than duties regularly assessed and ascertained and liquidated according to law upon plaintiff's entry thereof were collected or re-
17 ceived by defendant from the plaintiff.

Wherefore defendant demands judgment that the complaint be dismissed with costs.

WILLIAM DORSHEIMER,
*United States Attorney, Attorney for the Defendant.*

(Endorsed:) U. S. circuit court, southern district of New York. O. Oelschlaeger vs. William H. Robertson, collector, &c. Answer. William Dorsheimer, United States attorney, attorney for defendant.

18 At a stated term of the circuit court of the United States of America for the southern district of New York, in the second circuit, held at the United States court rooms in the city of New York on Friday, the eleventh day of December, in the year of our Lord one thousand eight hundred and eighty-five.

Present: The honorable Hoyt H. Wheeler, sitting as circuit judge.

OSWALD OELSCHLAEGER
vs.
WILLIAM H. ROBERTSON.

This case being still on trial the jurors sworn in it are called and severally answer to their names. John P. Clarke, esq., ass't U. S. att'y, moves that the court direct the jury to find a verdict for the defendant.

Motion denied and exception taken. Mr. Clarke sums up the case on the part of the defendant.

Mr. S. G. Clarke sums up the case on the part of plaintiff.

The court directs the jury to find a verdict for the plaintiff as to Exhibits Nos. 1, 1½, 4, 11, 15, 16, 18, 20, 21, 22, 24, 25, 26, 30, 32, 33, 40, 43.

The jury say that by direction of the court they find a verdict for the plaintiff as to Exhibits Nos. 1, 1½, 4, 11, 15, 16, 18, 20, 21, 22, 24, 25, 26, 30, 32, 33, 40, 43, and so say they all.

19 The court directs the jury to find a verdict for the defendant as to Exhibits Nos. 2, 3, 10, 12, 14, 17, 19, 27, 28, 29, 31, 34, 35, 36, 37, 38, 39, 41, 42, 44, and so say they all.

The jury say that by direction of the court they find a verdict for the defendant as to Exhibits Nos. 2, 3, 10, 12, 14, 17, 19, 27, 28, 29, 31, 34, 35, 36, 37, 38, 39, 41, 42, 44, and so say they all.

Counsel for the respective parties consenting in open court, it is

Ordered, That this action be, and the same hereby is, discontinued to Exhibit Nos. 23.

Charge is given by the court to the jury as to Exhibits Nos. 5, 6, 7, 8, 13.

The jury retire in charge of an officer duly qualified to attend them, and on their return say that they find a verdict for the plaintiff as to Exhibits Nos. 5, 6, and 8, and a verdict for the defendant as to Exhibits Nos. 7, 9, and 13, and so say they all.

On motion of counsel for defendant it is ordered that a certificate of probable cause be entered herein. It is further ordered that plaintiff and defendant each have a stay of sixty days on said verdict.

TIMOTHY GRIFFITH,
*Clerk.*

20 United States circuit court for the southern district of New York.

N. S. 9677.] CUSTOM-HOUSE, NEW YORK,
*Collector's Office, June* 1, 1887.

O. OELSCHLAGER
*v.*
W. H. ROBERTSON. } Verdict dated Jan. 2, 1886.

SIR: The adjustment in the above case is as follows:

| | |
|---|---|
| Amount overpaid | $203.00 |
| Interest added | 17.65 |
| | $220.65 |

Respectfully,

D. MAGONE,
*Collector.*

(C. 5.)

*To the United States District Attorney for the Southern District of New York.*

(Endorsed:) No. 93. Collector, &c., for the district of New York. 187. Reports adjustment of case of.

21 U. S. circuit court, southern district of New York.

OSWALD OELSCHLAGER
*v.*
WILLIAM H. ROBERTSON. } Judgment. 9677.

The above-entitled cause having been brought you for trial before the Hon. Hoyt H. Wheeler, sitting as a judge of this court and a jury, and a verdict having thereafter been rendered for the plaintiff subject to adjust-

ment at the custom house, and the same having thereafter been duly adjusted at the sum of two hundred and twenty dollars and sixty-five cents ($220.65), and the cost having thereafter been taxed in the sum of forty-six dollars and eighty-five cents ($46.85):

Now, upon motion of Charles Currie, attorney for the plaintiff, it is ordered that the plaintiff have judgment against the defendant herein in the sum of two hundred and twenty dollars and sixty-five cents
22 ($220.65) damages and the sum of forty-six dollars and eighty-five cents ($46.85) costs, making in all the sum of two hundred and sixty-seven dollars and fifty cents ($267.50), and that the plaintiff have execution therefor.

Dated New York, June 4, 1887.

Judgment signed this 4th day of June, 1887.

JOHN A. SHIELDS,
*Deputy Clerk.*

(Endorsed:) 9677. U. S. circuit court, southern district of New York. Oswald Oelschlager vs. William H. Robertson. Judgment roll. Charles Currie, attorney for plaintiff, 44 Exchange Place, N. Y. City. U. S. circuit court. Filed June 4, 1887. Timothy Griffith, clerk.

23 *Bill of exceptions.*

United States circuit court, southern district of New York.

OSWALD OELSCHLAEGER, )
*vs.* ) N. S. 9677.
WILLIAM H. ROBERTSON. )

Be it remembered, that afterwards and on the tenth day of December, 1885, the issues in this case came on for trial before the honorable Hoyt H. Wheeler, district judge of the United States for the district of Vermont, duly assigned to hold a stated term of this court, and a jury, duly empaneled.

To sustain the issues the plaintiff called James H. Stebbins, jr., who, being duly sworn, testified that he was an analytical and consulting chemist; that he had been devoted to the study of chemistry and other physics for some years; that he was a graduate of Harvard University, and had studied in the University of Paris, and in Berlin, and that since then he had been practicing chemistry in New York. That from 1871 to the present time he had been substantially engaged in the study of what is known as physics or natural philosophy in its various branches, and during that time he had become familiar with various instruments used in philosophical investigations and exemplifications.

Being handed an instrument which was marked Exhibit No. 1,
24 a compound microscope, he testified that this was a microscope used for examining very minute objects of all kinds which are invisible to the naked eye; that there were various microscopes; that they differ in the degree of fineness in the lenses, and the number of lenses which they contain. Exhibit No. 1 he should judge to be a compound microscope. That is to say, it contains a lens with an object-glass composed of a number of lenses arranged in a certain system, and also an eye-piece to make the images produced by the lenses clearer to the eye. The

witness further testified that this was neither the highest nor the lowest kind of microscope; but that he would term it a medium microscope; that it was fitted for practical use in the investigation of small objects; that scientists usually use the highest power of microscope in pursuing scientific investigations, although it is not absolutely necessary; that depended upon the objects which they were examining; that they don't always use the highest; frequently a low power is more desirable; that the best-made microscopes are usually *are usually* supplied with a variety of lenses, so that a person making an investigation can substitute a lower power lense if he chooses. That he should judge this exhibit (No. 1) is a combination of three lenses, and is undoubtedly adapted for high powers or low powers, as one may desire. By unscrewing the lens one part is removed, and the power is thus decreased; it can be unscrewed twice, and by that means you can get a very lower power object-glass; by screwing the lens
25 out again you get a higher power; but you could not tell by the looks of it what the exact power was. If he was using a low power he would have a much greater surface of vision at one time than he would with the highest. At a very high power he would only be able to see a minute portion of the object; the reason of that being that the object is magnified so much that *that* only a part of it can be seen at a time; while the lower power, not magnifying so much, takes in a larger field at once.

The box containing this microscope contains other parts. That is a sort of trough for examining fluids or water. This little cap covers it up and keeps the water in position and spreads it out and gives it an even layer; water or any other fluid. This is a usual accompaniment of the microscope. This is another adjunct of the microscope commonly called a "bull's-eye" lens. When an opaque object is being examined from a light in the mirror it throws the light up through, and can be used for obtaining an oblique illumination. Microscopists have occasion to use hand-lenses. That is a single lens where they make the focus without any machinery; and it is an adjunct of microscopes used, not only *my* microscopists, but chemists and physicians in general.

Exhibits No. 1½ are microscopic slides for Exhibit No. 1.

Being handed another article, marked Exhibit No. 2, a magnifying glass set in a brass frame above a slot, the witness testified that that was
26 a small microscope, or magnifying glass, commonly used in the examination of textile fabrics, but which can be used for examining a number of things besides. Applied to clothing, it tells how many threads there are to a certain surface; that is usually adjusted particularly for measuring cloth, but it is used for a great many other purposes. It is usually adjusted to cover half an inch or a quarter of a square inch; and he has used it himself for other purposes than measuring cloth. It is used by botanists for examining leaves to ascertain how various phenomena appear within a given space. Botanists would use it for that particularly. They would merely use it, as he would understand, for examining leaves, herbs, or anything of that kind. It was well adapted for that purpose.

Being cross-examined, he testified that this article No. 2 was used by the silk-men and cotton-men in trade, for determining the number of threads to the square inch; and that, so far as he knew, he should say

that it was used principally by them; that the principal use for which it was constructed in that peculiar way, that is to say, there being a magnifying glass and a slot, was to measure and determine the number of threads in a certain area of textile fabric, the fabric being placed under the slot, on looking through, a direct computation could be made of the number of threads to the square inch.

On being shown another article, marked Exhibit No. 3, jeweler's glass, the witness testified that that was a small microscope or magnifying
27 ing glass, used principally by jewelers in the manufacture of watches and jewelry in general, adapted to fit into the eye; that jewelers as a rule had to use their hands so much that they could not afford to hold the microscope by one hand and use the other, so they have it adjusted so they can stick it in the eye and work with both hands. It, however, can be used for magnifying and examining a number of other things besides jewelry. It was made for and used principally by jewelers.

On being shown another article marked Exhibit No. 4, astronomical telescope, he testified that that was a telescope which, in a certain sense, is the reverse of a microscope; that the telescope was an optical instrument for examining different objects, as, for instance, stars, or anything of that sort; it assists the eye in two ways; first, in enlarging the angular vision and thus magnifying it; and secondly, by collecting and directing the rays of light to the eye, that is, directing a larger beam of light to the eye than could be done without it. That telescopes are differently designed according to the distance or use to which they are to be put. That this exhibit is designed more particularly for examining stars and heavenly bodies, and is an astronomical telescope. That in his description of a telescope he practically covered all instruments which are used for seeing objects at a distance.

(The telescope, Exhibit No. 4, is about three feet long, mounted on a brass tripod.)

28 Exhibit No. 5 is a telescope known as a field-glass; it is not especially constructed for astronomical purposes; its main use is for viewing objects at a long distance, but not especially for heavenly bodies, although it could be used for some of the stars. It is used to gratify a laudable curiosity; it is used by seamen a great deal, and is of the general shape of a marine glass.

On being shown another article marked Exhibit No. 6, the witness testified that this was a double telescope or opera-glass or field-glass, either one or the other, based on the same principle as the larger telescope. That it was a telescope with low-power lenses in it of achromatic range; that is to say, it is constructed in such a way as to bring two concave-plano-convex glasses cemented together, and by that means to get a larger field of vision; but the principle was essentially the same as in the larger telescope. That this was not especially adapted for astronomical purposes; that it was used on shipboard and on land for the same general purposes that a single-barreled glass is used, and that it was too large and heavy for an opera-glass; it was an out-door glass. It was more convenient than the single-barrelled glass for certain purposes, because it was a smaller glass. Thas it was sometimes carried in a pouch. That both No. 5 and No. 6 were used for viewing objects at a short distance, and not adapted to astronomical purposes.

On being shown another article marked Exhibit No. 7, the witness testified that this was an opera-glass. That it was similar to the telescope, only smaller, with a lower grade of lenses.

29 Taking Exhibits Nos. 4, 5, 6, and 7, the witness stated that there was apt to be a little difference in the lenses between each. The lower power telescopes have achromatic lenses in them ; that is to say, two or more plano-convex lenses joined together. That is done in order to obtain a larger and clearer field of vision for short distances, while in the larger telescope there is apt to be a different series of lenses, either convex or concave, and sometimes double convex. All these four samples are adapted to view objects at a distance, and No. 4 is especially adapted for astronomical observations, and is mounted for that purpose. It is mounted on a tripod with universal joints so it can be turned in any direction, so that the object to be observed can be kept in the field of vision. The planets are constantly moving, and therefore the telescope has to be adjusted to follow the motion of the heavenly bodies, and it is so arranged. No. 5 is more of a hand instrument. It is not specially adapted for the examination of heavenly bodies, as the lenses are too weak for that; it is only used for a field-glass, or a glass for observing objects at a long distance—objects in general. No. 6 is a double telescope for the same purpose, only the lenses are not so strong. No. 7 is essentially the same as No. 6 in its construction, but with weaker lenses, and in point of fact is an opera-glass.

In regard to Exhibit No. 8, magnifying glass on brass tripod, the witness said that that was a low-power microscope or magnifying

30 glass; that it was commonly used for examining grain and minerals and things of that sort, and it was also used by botanists and entomologists ; that this lens was called the Coddington lens ; that as a chemist and scientist he has had occasion to use such a lens ; that this Exhibit No. 8, a magnifying glass mounted upon three legs, is used to examine the quality of grain ; it magnifies the grain and shows up the defects if there are any, and is used for that purpose by dealers in grain. They use that instrument in their business.

The witness testified that Exhibit No. 9, magnifying glass on handle, was a low-power microscope or magnifying glass, and that it was used for examining everything in general. That it was more particularly used for examining pictures, photographs, and things of that sort, and by experts in handwriting. That it was used by every one who desires a low-power microscope ; used by microscopists in getting at their articles for examination of the higher powers. That there was no peculiar philosophical purposes attained by that instrument ; that it was a low-power magnifying glass ; that it was used often in every-day life, sometimes as a burning glass ; often used to gratify curiosity.

Exhibit No. 10 is a plano-convex lens used for a number of purposes. They are used in the construction of telescopes for observing heavenly bodies, and also for opera-glasses. They are also used in magic lanterns. Two of them placed together constitute what is called a con-

31 denser, for the condensation of light. They are not in themselves a complete instrument, but are only a portion fitted for and to be used in these particular instruments. They are for no other purpose than to be used in such instruments. This is a four or five inch lens.

Exhibit No .11 is a speculum or reflecting mirror. It is used for reflecting the light which is thrown upon it in various directions. It is used as an illustration of the reflecting of light. It is used also in some of the larger telescopes, the old-fashioned telescopes made a number of years ago, where the light was reflected. The image of the object that was viewed was reflected from this mirror to the eye of the observer; after passing through the lenses in the usual way, the light fell upon a speculum of this sort and was then reflected to the eye. That is what is called a reflecting telescope. In this form its principal use is in the illustration of the refraction and reflection of light, and is an instrument found in a collection of instruments in schools and colleges, and has no particular practical use that he is aware of.

Exhibit No. 12 is an op'thalmoscope. It is a practical instrument used by oculists for examining the interior of the eye and other parts of the body. The principle on which it works is as follows: The light is reflected from a burner in front of the examiner, who holds this object to his eye, into the eye of the patient without penetrating the observer's eye, as there is only a very small hole through which it can enter; and in that
32 way protects the observer's eye from the direct rays of the light. It is peculiarly adapted for physicians' and oculists' use. It may have other uses, but the witness is not acquainted with them. It is used in their profession for the purpose of enabling them to get at the facts by which to treat either the throat or the eye, as the case may be, practically.

Exhibit No. 13 is a combination of a magnifying glass and a stereoscope. The larger lens above is nothing but a magnifying glass for magnifying photographs. Below is a combination of two magnifying glasses which are used for examining stereoscopic views, that is, two views on the same card. It produces a beautiful effect, brings out the pictures in a sort of relief, makes them appear in a more natural state than if examined with the naked eye. It is used by anybody; it presents an object that is flat upon the picture as a solid object, fills it out, and makes it appear more natural. It is used by pretty nearly everybody who wants to examine pictures and photographs. It is seen on many parlor tables, and is used for the gratification of curiosty. It is not used for scientific research nor has it philosophical value as a scientific instrument; but it is based on scientific principles and made in accordance with scientific laws; and from the fact that it is based on scientific principles he considered it a philosophical instrument, his definition of a philosophical instrument being one that is made on scientific principles.

33 Exhibit No. 14 is a box containing a number of glasses and lenses ground to different angles and different power, and is an oculist's outfit, for examining the different defects of the eye. The lenses are used to correct defects in the human eye. For instance, in a near-sighted person the retina is more convex; therefore a concave lens must be used to correct that superfluous convexness of the retina. A far-sighted person or a person that suffers from weak eyes has the retina contracted; therefore he must use a convex lens to counteract that defect. This box contains a series of convex and concave lenses of different powers, and there is an arrangement for fitting in these lenses and applying them to to the eye, just as in an ordinary spectacle frame. It also contains cylindrical lenses used for correcting the obliquity of the eye for short-sighted

or cross-eyed people, and this is a lens ground at an acute angle. If a person is very cross-eyed he has to wear a lens of comparatively greater angle; the less cross-eyed a person is, the less the angle of the lens. These are lenses of standard dimensions for the determining of what may be needed to correct the vision of any one who needs it. This is used by oculists in their profession for the purpose of finding out what the matter is with the patient's eye, and to give them a basis of facts upon which they can base their treatment, and that is its sole use. It is a practical, necessary, every-day tool for an oculist.

34 Exhibit No. 15 is a stereopticon or magic lantern. The peculiarity of the stereopticon consists essentially of three parts: its case, the box containing the light; inside of it and in front of the light is a condenser consisting of one or two convex lenses, or more; then at the end is the object glass, which modifies and projects the image of whatever is examined upon the screen. In this case the light enters from behind and is projected upon the screen in front. This instrument is used for illustrating lectures and instruction in colleges and universities, and for projecting pictures of different subjects upon a wall. It is used in the illustration of natural science.

Exhibits No. 16 are stereopticon slides belonging to Exhibit No. 15. The magic lantern is very often used as a toy; the smaller kinds are the more common kinds. That is merely a question of price. The question of material which enters into the construction of it is a consideration. The principle of action is the same. The same picture which could be used in the toy could be used in the higher-priced ones; and this instrument is used in the illustration of natural science, and is also a toy—a child's ordinary magic lantern.

Exhibit No. 17 is a dentist's speculum for examining the inside of the mouth; it has that special use for dentists and no other. It is a concave mirror, and reflects the rays of light that strike it. It is a necessary tool for a dentist, and is used for no other purpose.

35 Exhibit No. 18 is a Grenet battery; that is, an electric battery used for generating electricity. It consists of a positive carbon pole and a negative zinc pole which is inside and is arranged to slide up and down when the battery is not in use. When the battery is not in use the zinc is lifted up out of the solution, and that stops all further action. When you want to use it again to start the electricity you press the zinc down. A vacuum is filled with bi- potassium dissolved with water and a little . It is an electrical apparatus, and has one bad quality; that is, becoming polarized in a very short time. In other words, the zinc pole becomes coated with little particles of hydrogen, and that prevents all further action in the oxidizing solution and *and* stops it. The battery is used in laboratories largely. He has used it in his own. It is used almost exclusively as an experimental machine. It can not be used as a practical machine on account of the short time it runs. It becomes exhausted in a very short time. Its main use is in the explanation of the laws of electricity.

Exhibit No. 19 is a combination of a battery and Rhumkorf coil. It is a device used by physicians principally for treating their patients with electricity. The battery is on one side, and on the other is the induction coil which produces the electric shock on the other. In the middle there is nothing but some wires and needles. This is used by physicians in the

treatment of patients for a variety of diseases. It is made in that particular form so as to be carried in the pocket. It is the necessary tool
36 of the physician in his every day practice if he uses electricity; and that is its main and important use.

Exhibit No. 20 is a Rhumkorf coil. This coil is constructed on the following principle: Around a central core of soft iron is wound a certain number of turns of copper wire, each turn being insulated by a layer of paper or some other insulating material; then on top of this coarser wire is wound in the same direction a large number of layers of very thin wire, each one likewise insulated by a layer of paper or other insulating material, and the fine wires connect with the two poles on top and the coarser wires connect with the lower, with the commutator running from one pole to the other. This box is filled with what is called condenser. The condenser is a series or number of plates of tin foil such as we find wound around tobacco. That stores up electricity somewhat on the principle of a Leyden jar, and keeps it stored, so that when a person uses it he gets as much greater shock than he would if the condenser were not there. That is used in schools and universities, and also by physicians, and by people who merely use it for their own amusement. It is used practically in colleges and universities to illustrate electrical science, and also by every
37 one who has occasion to generate that kind of electricity. It is also used to explode mines at times, to explode dynamite cartridges, or anything of that kind. It may be used in connection with a battery. It has no practical use in telegraphing. Its main use is for illustrating the laws of electrical induction.

Exhibit No. 21 is a galvanometer. It is an electrical instrument used for measuring the intensity or strength of currents. This is a differential galvanometer. It is based on the principle of the magnetic needle. It deviates to the right or left, according to the intensity of the current passing through it. This is a small galvanometer used for testing the strength of batteries or other instruments. It is not scientific enough to be used for measuring the strength of currents; it merely shows whether the current is running or not. They are made of various degrees of fineness, and when of sufficient degree of fineness they are used in measuring the strength of currents. This is merely to tell whether the current is running at all. The degrees on the scale are merely to tell how far the needle deviates. The strength of the current is measured in proportion to the deviation of the needle. These are used by scientists and are used also by electricians. An instrument of that kind of that degree of fineness is usually used in the laboratory. If the galvanometer was of a better
38 and more accurate kind it would have a better practical use in telegraph offices. This is not fine enough.

Exhibit No. 22 is a Geisler tube used by scientists to examine the properties of sparks; for instance, of the Rhumkorf coil we have just examined, or any electric spark. It consists of a glass tube which is sometimes exhausted of all air, so you examine the spark in a vacuum. It is sometimes filled with other gases to examine the properties of sparks in gases. It is sometimes filled with liquid. It has no practical use. They are made of various picturesque and artistic shapes; some of them are very striking and give very pretty pictures in the dark.

This suit as to Exhibit No. 23 was discontinued by plaintiffs by leave of the court.

Exhibit No. 24 is an anemometer, and is used for measuring the velocity of the wind. It is nothing but a wheel revolving around its own axis, with a dial indicating the number of revolutions it makes; and of course it measures the velocity of the wind. It is used in observatories for that purpose.

Exhibits Nos. 25 and 26 are hygrometers. An hygrometer is
39 an instrument devised for measuring the amount of moisture in the atmosphere. It consists of two thermometers; above one of them is wound a piece of silk with a small amount of cotton fastened to it and that dips into a vial containing water. The water, on evaporation, loses a certain degree of coldness and, consequently, one thermometer will be higher than the other, and by using tables for calculation the dew point can be determined, that is to say, the amount of moisture there is in the atmosphere. This description is of Exhibit No. 25. Exhibit No. 26 is undoubtedly based upon the same principle; the object or purpose of it is the same, and the sole object of either of these instruments is to obtain the degree of moisture in the atmosphere. It is used to determine facts in meteorology and also in laboratories. The witness has one in his own laboratory. The instrument is found in educational institutes to illustrate the truths of natural science. They are not used by any other than scientific persons and are not instruments of every-day use.

Exhibit No. 27 is a thermometer and instrument for measuring the variations of temperature; it is based upon the principle of liquids and solids contracting and expanding with the variations of the temperature. Thermometers have been known for a long while; they are used to a very large extent in scientific investigations. There are thermometers of different scales—the Fahrenheit, the centigrade, and the Roaumur. The centigrade scale is used principally by scientists. The principle is the same throughout. In this country, the witness thinks, in all meteoro-
40 logical observations the Fahrenheit scale is used. This exhibit, No. 27, has two scales, Fahrenheit on one side and Reaumur on the other, and is mounted on glass.

Exhibit No. 28 is practically the same thing as No. 27, except that one is mounted on glass and the other on wood. It is the kind of thermometer bought and sold by everybody; it is not specially adapted to scientific purposes. It is hung up in every room to measure the temperature.

Exhibit No. 29 is what is called a minimum thermometer. It is filled with alcohol and is used for measuring very low temperatures—temperatures below the freezing point of mercury—and it is based upon the same principles of the expansibility and contractibility of fluids. It does not register, and is simply for temperatures below the freezing point of mercury; that is, below 110 degrees. It can be used where the mercury thermometer can not be used. It is a scientific instrument, used for scientific purposes. The principle of action is the same in each case. This tube is filled with alcohol instead of mercury. We have never been able to freeze alcohol.

Exhibit No. 30 is what is called a maximum and minimum thermometer, for recording the temperatures produced. One side records temperature during the day-time, and the other during the night. There are two

little flues in each tube, consisting of a little steel wire held in posi-
41 tion by a little head. As the mercury rises on one side it shoves the indicator up; then it goes down again, it leaves the indicator where it stopped rising and pushes the one on the opposite side up; and whenever the indicator stops it tells you how high or low the temperature was during the night. This is graduated on the Fahrenheit scale. It is used principally by scientific people; it may be used by others. Its sole object is to register permanently the highest and lowest points of temperature. There is no reason why it shouldn't be used by anybody.

Exhibit No. 31 is a small Fahrenheit thermometer. It is not a very accurate thermometer; and from the nature of its attachment it is the kind that is put on plush plaques and fancy ornaments, and has not any special scientific value; the witness would not consider it an accurate or reliable thermometer; it is an ordinary, every-day, bric-a-brac thermometer.

Exhibit No. 32 is a combination of hydrometer and thermometer. The hydrometer is an instrument used for measuring the density of fluids, and the thermometer is added to it simply to measure the density at certain temperatures. The witness judges that that is a lactometer, for measuring the density of milk. It is marked "Dairy thermometer;" it is used by dairymen; it is a practical instrument in there business, and that is what it is made for. It is also used by chemists. The common use to which it is put is for dairymen. It is a dairy thermometer; it is a
42 practical instrument in their business. It gives an arbitrary specific gravity and density; it tells them when to turn the water on.

Being asked the question, "What is an hydrometer?" the witness testified as follows:

An hydrometer is an instrument for measuring the specific gravity of liquids and fluids. There are two kinds. One is the hydrometer of constant volume, the other the hydrometer of constant weight. The hydrometer of constant volume is made usually out of tinned iron or out of brass. It consists of an article with a little band around the bottom and a band at the top. There is a long neck on it, and on this neck is a certain mark. The hydrometer is first sunk in water and weighed with weights until the water strikes that mark exactly. Then it is taken out and placed in the liquid to be examined; the weights are adjusted until the same mark is arrived at. Then, by simple calculation, the specific gravity of the liquid can be taken, because all liquids are based upon water as a unit. Water is taken as a unit in weight—water at 40 degrees cent. An hydrometer of that sort, by the proper calculation, will get the specific gravity of any liquid. The hydrometers used for certain liquids are usually called the Baume hydrometers; they are based on a little different principle. It is weighted in water to a certain mark, which we call zero, and then a solution of salt consisting of 85 parts water and 15 parts salt is made, and the hydrometer dipped into this solution. It will now
43 rise to another mark on the neck which Baume calls 15 degrees. Then the hydrometer is divided between zero and 15 degrees into 15 parts, and so on down the whole length of the scale. In this Exhibit No. 32 the scale is arbitrary for measuring milk.

Exhibit No. 33 is a thermometer such as are usually used in laboratories; it is a laboratory thermometer. It is used in chemical laboratories

and physical laboratories; however, it can be used for any other purpose for which the ordinary thermometer is used. On account of its breakability it is only used in laboratories.

Exhibit No. 34 is a clinical thermometer, a small thermometer used by physicians to obtain the temperature of the body. There is nothing peculiar about it, except that it is only graduated to a certain limit, the limit of temperature to which the human body is apt to be subjected in case of fever. It is a thermometer graduated for use by physicians, and used almost exclusively by them. The witness knows no other use except for physicians. They can be used for anything else where the range of temperature is not too high. This exhibit is only graduated to 110 degrees, and above that you would have to use another thermometer.

Exhibit No. 35 is another variety of the same thing, a clinical thermometer. It is different from the other in simply containing a magnifyer. It seems to be ground at a certain angle so that it magnifies the scale when you look at it. That is for use in reading. It has an index
44 in it to see what point is reached. The other one has no index.

Exhibits Nos. 34 and 35 are the every-day tools of a working physician, and especially adapted for such use.

Exhibit No. 36 is an ordinary Fahrenheit pocket thermometer arranged with a brass cover to it, to carry in the pocket. This is simply a form for carriage. It has no special use. It is an every-day, common-place thermometer.

Exhibits Nos. 37 and 38 are both aneroid barometers. A barometer is an instrument used for measuring the pressure and weight of the atmosphere. The pressure of the atmosphere varies according to the height the barometer is carried above the sea-level. It varies from time to time with the perturbations of the atmosphere. The barometer is used to indicate changes in the weather occurring out of those perturbations, and to measure heights. It is used for nothing else. It is a scientific instrument when used for the observation of those phenomena, to ascertain heights above the sea-level, and to forecast the weather. The aneroid barometer is used for the same purpose.

Exhibit No. 39 is also an aneroid barometer. A great many people have barometers in their houses, as well as thermometers. They are used for the same purposes, as the gratification of curiosity. They are practical instruments on shipboard. They are needed more on shipboard than in the house. They form one of the adjuncts of a fully equipped
45 ship.

Exhibit No. 40 is a hydrometer. It can be used for any fluid, only it is hypothetically graduated on a particular scale, an arbitrary scale. It is a well-known instrument used by scientists and every one who wants to examine the specific gravity of liquids. It is graduated somewhat on the principle of the scale of the Baume thermometer. It is not especially adapted to any one liquid. It is an ordinary hydrometer which can be used by any person. It is not delicately graded. It does not indicate the true specific gravity. It only measures an arbitrary specific gravity which you can convert by calculation into the true specific gravity. It is not more specially adapted to laboratory work than to any other work, nor is it more especially adapted to laboratory work than any other of the hydrometers that have been in evidence. The gravity of any

liquid can be taken with this instrument, while the others are specially designed for particular liquids. This has a wider scope.

Exhibit No. 41 is also an hydrometer, or, more specifically, an alcoholometer, for measuring the specific gravity of alcohol. It is usually called the Trallis hydrometer. It is so graduated as to determine the specific gravity of alcohol. It combines a thermometer with it to give the specific gravity at certain temperatures. It is fitted for scientific research in that respect, but it is used practically in business by dealers in alcohol and in wines and liquors. This instrument is also used in the Government service in the gauging of liquors by custom-house gaugers. It is
46 an every-day, practical instrument, and is especially adapted for that purpose, although it may be used in scientific investigations.

Exhibit No. 42 is a urinometer. It is a small hydrometer constructed for taking the specific gravity of urine. It is used by chemists and by doctors. This one has a small cylinder to measure the quantity. This is a practical, every-day physician's instrument. It is a doctor's tool. In the present state of medical science it is almost indispensable to a physician's outfit. They use it in almost every case. It is one of the essentials to a successful diagnosis. They always start in by using that.

Exhibit No. 43 is a radiometer. It is a scientific instrument used for no other purpose except to illustrate the radiation of heat and light. It consists of a number of light mica discs suspended on a sharp wire; and one side of the mica disc is blackened; when a strong ray of light impinges upon that blackened surface—light or heat—it starts the whole thing revolving in the opposite direction. It is no use except for illustrating the radiation of light and heat.

Exhibit No. 44 is a number of convex and concave lenses of varying degrees of strength and shape and kind, to be put into glasses or spectacles that are made for that purpose, and intended for that purpose only. They are the ordinary lenses used for spectacled glasses. They are in no sense a philosophical instrument, except that they are made on philosophical principles.

47 The witness, on cross-examination by counsel for defendant, further testified: In the standard works for students and scientists known under the title of Physics and Natural Philosophy most of these various articles are described. The greater part of them are used in schools for the illustration and investigation of natural science. A great many articles are used in demonstrating the facts of physical science in schools and colleges by professors, and to demonstrate the facts of magnetism needles and small bits of wire are used, and to demonstrate wave motion a chain is used. In fact, almost any article may be used to illustrate or demonstrate a scientific fact. The witness believes that the fact that any article may be used to illustrate a scientific principle makes it a philosophical instrument.

"Q. Do you agree with this definition of a philosophical instrument: 'An instrument adapted and fitted for the observation, the investigation, and the recording or the illustration of natural phenomena'?

"A. I think that includes them all.

"Q. May it not include many instruments which are not philosophical instruments?

"A. I don't know that I can say that it does. I don't think it could.

"Q. Is a watch a philosophical instrument?

"A. That is a little out of philosophy; that belongs to the principle of mechanics.

48 "Q. Yet it is adapted and used for the observation and investigation and recording, and for the illustration of natural phenomena?

"A. Yes, sir.

"Q. What do you say to this definition of philosophical instruments: 'A philosophical instrument is one whose prime use is in the scientific investigation of physical phenomena'?

"A. I don't see that that differs very much from the other definition, except that you leave out two points. I say that partly covers it."

To a juror: Doctor Pasteur's investigations in Paris are highly philosophical. If he were going to take the temperature of the animals he is treating he would probably use a very highly accurate and fixedly graded clinical thermometer.

Thereupon, the testimony being closed, defendant, by his counsel, asked the court to direct a verdict for the defendant as to each of the articles in question. The court directed the jury to return a verdict for the defendant as to the following articles:

Ex. 2. Small microscope for examining testile fabrics.
Ex. 3. Jeweler's magnifying glass.
Ex. 10. Piano convex lens, unmounted.
Ex. 12. Oph'almoscope.
Ex. 14. Oculist's outfit.
Ex. 17. Dentist's speculum.
49 Ex. 19. Pocket battery for physician.
Ex. 27. Thermometer.
Ex. 28. Thermometer.
Ex. 29. Thermometer, minimum.
Ex. 31. Thermometer (bric-a-brac).
Ex. 32. Dairy thermometer & hydrometer.
Ex. 34. Clinical thermometer.
Ex. 35. Clinical thermometer.
Ex. 36. Pocket thermometer.
Ex. 41. Alcoholometer.
Ex. 42. Urinometer.
Ex. 44. Spectacle lenses.

Thereupon the plaintiff, by his counsel, took an exception to the direction of the court specifically as to each of these articles, which exceptions were duly allowed.

Thereupon the plaintiff, by his counsel, asked the court to direct a verdict for the plaintiff as to each of the articles in question. The court directed a verdict for the plaintiff as to the following articles:

Ex. 1. Large compound microscope.
Ex. 1½. Prepared slides for Ex. 1.
Ex. 4. Astronomical telescope on tripod.
Ex. 11. Reflecting mirror used in old telescopes.
Ex. 15. Stereopticon or magic lantern.
Ex. 16. Slides prepared for Ex. 15.

Ex. 18. Grenet battery.
Ex. 20. Inductive Rhumkorf coil.
50 Ex. 21. Galvanometer.
Ex. 22. Geissler tube.
Ex. 24. Anemometer.
Ex. 25. Hygrometer.
Ex. 26. Hygrometer.
Ex. 30. Maximum and minimum thermometer.
Ex. 33. Lab'ratory thermometer.
Ex. 37. Barometer.
Ex. 38. Barometer.
Ex. 39. Barometer.
Ex. 40. Hydrometer, for general purposes.
Ex. 43. Radiometer.

And thereupon, the defendant, by his counsel, took exception to the direction of the court, specifically as to each of these articles, which exception was duly allowed.

The court refused to direct a verdict, having been requested by counsel for defendant, for defendant, and having been requested by counsel for plaintiff, for plaintiff, as to the following articles:

Ex. No. 5. Single-barrelled telescope or marine glass;
Ex. No. 6. Double-barrelled field glass;
Ex. No. 7. Opera glass;
Ex. No. 8. Small telescope on tripod;
Ex. No. 9. Magnifying glass with handle;
Ex. No. 13. Combination of magnifying glass and stereoscope;

51 but left the questions as to these articles to the jury.

And thereupon defendant expected specifically as to each article to the refusal to direct a verdict for plaintiff, which exception was duly allowed.

And plaintiff excepted specifically as to each article to the refusal to direct a verdict for plaintiff, which exception was duly allowed.

And thereupon the jury, having received the charge of the court, retired in charge of an officer, &c., and subsequently returned a verdict as follows:

They found for the plaintiff as to No. 5 single-barrelled telescope.
No. 6. Double-barrelled field glass.
No. 8. Small microscope on tripod, and for the defendant, as to No. 7. Opera glass.
No. 9. Magnifying glass with handle.
No. 13. Combination of magnifying glass and stereoscope, and as to the other articles as directed by the court, which verdict was duly recorded.

And because none of the said matters appear upon the records of said trial, therefore, on the prayer of the several parties by their counsel, the said judge has signed this bill of exceptions nunc pro tunc, as of the 11th day of December, 1885, and ordered the same to be filed.

HOYT H. WHEELER.

52 (Endorsed:) U. S. circuit court. Southern district of New York. Oswald Oelschlaeger vs. Wm. H. Robertson. Bill of

exceptions. Stephen A. Walker, United States attorney, attorney for defendant. U. S. circuit court. Apr. 7, 1887. Filed. Timothy Griffith, clerk.

53 *Assignments of errors.*

Supreme Court of the United States.

WILLIAM H. ROBERTSON, PLAINTIFF IN ERROR,
*v.*
OSWALD OELSCHLAEGER, DEFEND'T IN ERR.

Afterwards, to wit, on the second Monday of October, in the same term, before the justices of the said court at the Capitol in Washington, comes the said plaintiff in error, by Stephen A. Walker, his attorney, and says that in the record and proceedings aforesaid there is manifest error in this, to wit: That by the record aforesaid it appears that the judgment aforesaid, in form aforesaid given, was given for the said defendant in error against the said plaintiff in error, whereas, by the law of the land, the said judgment ought to have been given for the said plaintiff against the said defendant.

And the said plaintiff prays that the judgment aforesaid, for the error aforesaid and other errors in the record and proceedings aforesaid, may be reversed, annulled, and altogether held for nothing, and that he, the said plaintiff, may be restored to all things which he has lost by occasion of said judgment, &c.

STEPHEN A. WALKER,
*Attorney for Plaintiff in Error.*

54 (Indorsed:) 9677. United States Supreme Court. William H. Robertson, plaintiff in error, vs. Oswald Oelschlaeger, defend't in error. Assignment of error. Stephen A. Walker, attorney for plaintiff in error. Due service of a copy of the within assign't of error is hereby admitted this 7th d'y of June, 1887. Chas. Curie, att'y for d'f't in err. U. S. circuit court. F'l'd June 7, 1887. Timothy Griffith, clerk.

55 Supreme Court of the United States.

WILLIAM H. ROBERTSON, PLAINTIFF in error,
*against*
OSWALD OELSCHLAGER, DEFENDANT in error.
} Joinder in error. No. 9677.

And afterwards, to wit, on the 2nd Monday of October, 1887, the defendant in error herein, by Charles Curie, esq., his attorney, comes into court and says that there is no error either in the record or proceedings aforesaid, or in the judgment aforesaid, and he prays that this court may proceed to examine the record and proceedings aforesaid as to the matters assigned for error, and that the judgment herein be in all things affirmed.

(Endorsed:) U. S. Supreme court. William H. Robertson, plaintiff in error, against Oswald Oelschlager, defendant in error. Joinder in error.

Charles Curie, att'y for def't in error, 44 Exchange Place, N. Y.
56 City. Due service of a copy of the within is hereby admitted, N. Y., June 7th, 1887. (S'g'd) Stephen A. Walker, attorney for p'l'ff in error. (File mark:) U. S. circuit court. Filed June 7, 1887. Timothy Griffith, clerk.

57 UNITED STATES OF AMERICA, *ss*:

To Oswald Oelschlaeger, greeting:

You are hereby cited and admonished to be and appear at a Supreme Court of the United States, to be holden at Washington, on the second Monday of October, eighteen hundred and eighty-seven, pursuant to a writ of error, filed in the clerk's office of the circuit court of the United States for the southern district of New York, wherein William H. Robertson is plaintiff in error and you are defendant in error, to show cause, if any there be, why the judgment in the said writ of error mentioned should not be corrected, and speedy justice should not be done to the parties in that behalf.

Dated June 6th, 1887.

WM. F. WALLACE.

58 (Indorsed:) 9677. U. S. Supreme Court. William H. Robertson, plaintiff in error, against Oswald Oelschlaeger, defendant in error. Citation. Stephen A. Walker, attorney for plaintiff in error. Due service of a copy of the within citation is hereby admitted this 7 day of June, 1887. Charles Curie, attorney for def't in error.

(Stamp:) U. S. Supreme Court. Filed Jun. 7, 1887. Timothy Griffith, clerk.

59 UNITED STATES OF AMERICA, *ss*:

The President of the United States to the judges of the circuit court of the United States for the southern district of New York, greeting:

Because in the records and proceedings, and also in the rendition of the judgment of a plea, which is in the said circuit court before you, between Oswald Oelschlaeger, plaintiff, and William H. Robertson, defendant, a manifest error hath happened to the great damage of the said Oswald Oelschlaeger, as by his complaint appears, we being willing that the error, if any hath been, should be duly corrected, and full and speedy justice done to the party aforesaid in this behalf, do command you, if judgment be therein given, that under your seal, distinctly and openly, you send the record and proceedings aforesaid, with all things concerning the same, to the Supreme Court of the United States, together with this writ, so that you may have the same at Washington on the second Monday of October, eighteen hundred and eighty-seven, in the said Supreme Court, to be then and there held, that the record and proceedings aforesaid being inspected the said Supreme Court may cause further to be done thereon to correct that error what of right and according to the laws and customs of the United States should be done.

Witness the Hon. Morrison R. Waite, Chief-Justice of the said Supreme Court, the fifteenth day of September, in the year of our Lord one thousand eight hundred and eighty-seven.

TIMOTHY GRIFFITH, *Clerk.*

The foregoing writ is hereby allowed.
E. HENRY LACOMBE.

60 UNITED STATES OF AMERICA,
*Southern district of New York, ss:*

I, Timothy Griffith, clerk of the circuit court of the United States for the southern district of New York, in the second circuit, by virtue of the foregoing writ of error, and in obedience thereto, do hereby certify that the following pages, numbered from three to sixteen inclusive, contain a true and complete transcript of the stipulation, assignment of error, joinder in error, bond, and citation in the case of Oswald Oelschlaeger, plaintiff in error, against William H. Robertson, defendant in error, as the same remains of record and on file in said office.

In testimony whereof I have caused the seal of the said court to be hereunto affixed, at the city of New York, in the southern district of New York, in the second circuit, this tenth day of October, in the year of our Lord one thousand eight hundred and eighty-seven, and of the Independence of the United States the one hundred and twelfth.

[SEAL.] TIMOTHY GRIFFITH,
*Clerk.*

(Indorsed:) No. 9677. U. S. Supreme Court. Oswald Oelschlaeger, plaintiff in error, against William H. Robertson, defendant in error. Writ of error. Due service of a copy of the within writ of error is hereby admitted this 15 day of September, 1887. Stephen A. Walker, sr., attorney for defendant in error.

(Stamp:) U. S. circuit court, Sept. 15, 1887. Timothy Griffith, clerk.

61 Circuit court of the United States for the southern district of New York.

OSWALD OELSCHLAEGER
*v.*
WILLIAM H. ROBERTSON, COLLECTOR, &C.

In the above entitled action the original defendant, Robertson, has heretofore sued out a writ of error to the Supreme Court of the United States returnable at the October term, 1887, of that court, and the clerk of the said circuit court has heretofore made return to that writ of error of the record of said suit therein; now, the original plaintiff, Oelschlaeger, having also sued out his writ of error, returnable to the same term of the Supreme Court of the United States—

62 It is hereby stipulated and agreed that the record returned upon the writ of error so sued out by said Robertson shall be taken, deemed, and treated as if also returned upon the writ of error now sued out by said Oelschlaeger.

STEPHEN A. WALKER,
*Attorney for said Robertson.*

STANLEY, CLARKE & SMITH,
*Attorneys for said Oelschlaeger.*

(Endorsed:) U. S. circuit court, So. dist. of New York. Oswald Oelschlaeger, William H. Robertson. Stipulation. Stanley, Clarke & Smith, att'ys for Oelschlaeger; Stephen A. Walker, U. S. att'y, att'y for Robertson. U. S. circuit court. Filed Oct. 7, 1887. Timothy Griffith, clerk.

63 *Assignment of errors.*

Supreme Court of the United States.

OSWALD OELSCHLAEGER, PLAINTIFF IN ERROR,
*vs.*
WILLIAM H. ROBERTSON, DEFEND'T IN ERROR.

Afterwards, to wit, on the second Monday of October in the same term, before the justices of the said court, at the Capitol in Washington, comes the said plaintiff in error, by Stanley, Clarke, & Smith, his attorneys, and says that in the record and proceedings aforesaid there is manifest error in this, to wit:

1. The refusal of the court to direct a verdict for the plaintiff as to Exhibit No. 2, small microscope for examining textile fabrics, and the direction of a verdict for the defendant on such exhibit.

2. The refusal of the court to direct a verdict for the plaintiff as to Exhibit No. 3, jeweler's magnifying glass, and the direction of a verdict for the defendant on such exhibit.

64 3. The refusal of the court to direct a verdict for the plaintiff as to Exhibit No. 10, plano-convex lens unmounted, and the direction of a verdict for the defendant on such exhibit.

4. The refusal of the court to direct a verdict for the plaintiff as to Exhibit No. 12, ophthalmoscope, and the direction of a verdict for the defendant on such exhibit.

5. The refusal of the court to direct a verdict for the plaintiff as to Exhibit No. 14, oculist's outfit, and the direction of a verdict for the defendant on such exhibit.

6. The refusal of the court to direct a verdict for the plaintiff as to Exhibit No. 17, dentist's speculum, and the direction of a verdict for the defendant on such exhibit.

7. The refusal of the court to direct a verdict for the plaintiff as
65 to Exhibit No. 19, pocket battery for physician, and the direction of a verdict for the defendant on such exhibit.

8. The refusal of the court to direct a verdict for the plaintiff as to Exhibit No. 27, thermometer, and the direction of a verdict for the defendant on such exhibit.

9. The refusal of the court to direct a verdict for the plaintiff as to Exhibit No. 28, thermometer, and the direction of a verdict for the defendant on such exhibit.

10. The refusal of the court to direct a verdict for the plaintiff as to Exhibit No. 29, thermometer, minimum, and the direction of a verdict for the defendant on such exhibit.

11. The refusal of the court to direct a verdict for the plaintiff as to Exhibit No. 31, thermometer (bric-a-brac), and the direction of a verdict for the defendant on such exhibit.

12. The refusal of the court to direct a verdict for the plaintiff as to Exhibit No. 32, dairy thermometer and hydrometer, and the direc-
66 tion of a verdict for the defendant on such exhibit.

13. The refusal of the court to direct a verdict for the plaintiff as to Exhibit No. 34, clinical thermometer, and the direction of a verdict for the defendant on such exhibit.

14. The refusal of the court to direct a verdict for the plaintiff as to Exhibit No. 35, clinical thermometer, and the direction of a verdict for the defendant on such exhibit.

15. The refusal of the court to direct a verdict for the plaintiff as to Exhibit No. 36, pocket thermometer, and the direction of a verdict for the defendant on such exhibit.

16. The refusal of the court to direct a verdict for the plaintiff as to Exhibit No. 41, alcoholometer, and the direction of a verdict for the defendant on such exhibit.

67 17. The refusal of the court to direct a verdict for the plaintiff as to Exhibit No. 42, urinometer, and the direction of a verdict for defendant on such exhibit.

18. The refusal of the court to direct a verdict for the plaintiff as to Exhibit No. 44, spectacle lenses, and the direction of a verdict for the defendant on such exhibit.

19. The refusal of the court to direct a verdict for the plaintiff as to Exhibit No. 7, opera glass.

20. The refusal to direct a verdict for the plaintiff as to Exhibit No. 9, magnifying glass with the handle.

21. The refusal to direct a verdict for the plaintiff as to Exhibit No. 13, combination of magnifying glass and a stereoscope.

22. The judgment entered upon the verdict.

STANLEY, CLARKE & SMITH,
*Attorneys for Plaintiff in Error.*

68 "Endorsed:"

Supreme Court of the United States. Oswald Oelschlaeger, pl'ff in error, v. William H. Robertson, def't in error. Assignment of error.

Stanley, Clarke & Smith, att'ys for pl'ff in error, 120 Broadway, N. Y. City.

Due service of a copy of the within assignment of error admitted this 19th day of September, 1887.

STEPHEN A. WALKER,
*Att'y for Defendant in Error.*

U. S. circuit court. Filed Sept. 19, 1887. Timothy Griffith, clerk.

69 *Joinder in error.*

Supreme Court of the United States.

OSWALD OELSCHLAEGER, PLAINTIFF IN ERROR,
*vs.*
WILLIAM H. ROBERTSON, DEFENDANT IN ERROR.

And afterwards, to wit, on the second Monday of October, in said term, the said defendant in error, by Stephen A. Walker, his attorney, comes

here into court and says that there is no error either in the record or proceedings aforesaid, or in the giving of the judgment aforesaid.

And he prays that the said Supreme Court, before the justices thereof, now here, may proceed to examine as well the record and proceedings aforesaid as the matters aforesaid above assigned for error, and that the judgment aforesaid, in form aforesaid given, may be in all things affirmed, &c.

STEPHEN A. WALKER,
*Attorney for Defendant in Error.*

70 (Indorsed:) 9677. United States Supreme Court. Oswald Oelschlaeger, plaintiff in error, vs. William H. Robertson, defendant in error. Joinder in error. Stephen A. Walker, attorney for def't in error. Due service of a copy of the within joinder in error is hereby admitted this 20th day of September, 1887. Stanley, Clarke & Smith, attorneys for pl'ff in error. U. S. circuit court. Filed Sept. 20, 1887. Timothy Griffith, clerk.

71 *Bond for costs.*

Circuit court of the United States of America for the southern district of New York, in the second circuit.

OSWALD OELSCHLAEGER, PLAINTIFF IN ERROR,
*vs.*
WM. H. ROBERTSON, DEFENDANT IN ERROR.

Know all men by these presents, that we, Julius Binge, of the city and State of New York, and James T. Drummond, of Lakeview, Passaic County, and State of New Jersey, are held and firmly bound unto the above-named Wm. H. Robertson, defendant, in the sum of two hundred & fifty dollars, to be paid to the said W. H. Robertson, for the payment of which, well and truly to be made, we bind ourselves, and each of us, our and each of our heirs, executors, and administrators, jointly and severally, firmly by the these presents. Sealed with our seals and dated the eleventh day of August, in the year of our Lord one thousand eight hundred and eighty-seven.

Whereas the above-named Oswald Oelschlaeger has prosecuted his writ of error to the Supreme Court of the United States, to reverse the judgment rendered in the above entitled suit by the judge of the circuit court of the United States for the southern district of New York;

Now, therefore, the condition of this obligation is such, that if the above-named Oswald Oelschlaeger shall prosecute his writ of error to effect and answer all costs, if he shall fail to make his said writ of error good, then this obligation shall be void, otherwise the same shall be and remain in full force and virtue.

JULIUS BINGE. [L. S.]
112 *E. 61st, New York.*
JAS. T. DRUMMOND. [L. S.]

Sealed and delivered and taken and acknowledged this 11th day of August, 1887, before me.

[L. S.]
M. J. BINGE,
*Notary Public, N. Y. C., No. 74.*

72 UNITED STATES OF AMERICA,
*Southern District of New York, ss:*

Julius Binge and James T. Drummond both being duly sworn, depose and says each for himself that he is worth the sum of five hundred dollars, over and above all his just debts and liabilities.

JULIUS BINGE.
JAS. T. DRUMMOND.

Sworn to this eleventh day of August, A. D. 1887, before me.

M. J. BINGE,
*Notary Public, N. Y. C., No.* 74.

(Indorsed:) U. S. circuit court, southern district of New York. Oswald Oelschlaeger vs. Wm. H. Robertson. Bond for costs on writ of error to U. S. Supreme Ct. Charles Currie, att'y for pl'ff. Approved as to form, amount, and sufficiency. E. Henry Laconte. U. S. circuit court. Filed Sept. 15th, 1887. Timothy Griffith, clerk.

73 UNITED STATES OF AMERICA, *ss:*

To William H. Robertson, greeting:

You are hereby cited and admonished to be and appear at a Supreme Court of the United States, to be holden at Washington, on the second Monday of October, eighteen hundred and eighty-seven, pursuant to a writ of error filed in the clerk's office of the circuit court of the United States for the southern district of New York, wherein Oswald Oelschlaeger is plaintiff in error, and you are defendant in error, to show cause, if any there be, why the judgment in the said writ of error mentioned should not be corrected, and speedy justice should not be done to the parties in that behalf.

Dated September 15th, 1887.

E. HENRY LACOMBS.

74 (Indorsed:) No. 9677. U. S. Supreme Court. Oswald Oelschlaeger, plaintiff in error, against William H. Robertson, defendant in error. Citation. Due service of a copy of the within writ of error is hereby admitted this 15 day of September, 1887. Stephen A. Walker, attorney for defendant in error.

(Stamp:) U. S. circuit court. Sept. 15, 1887. Timothy Griffith, clerk.

74½ (Indorsement on cover:) No. 380. William H. Robertson, collector of the port of New York, plaintiff in error, vs. Oswald Oelschlaeger. Filed August 25, 1887. No. 558. Oswald Oelschlaeger, plaintiff in error, vs. William H. Robertson, collector of the port of New York. Filed October 18, 1887. S. New York C. C. U. S.

Supreme Court, U. S.
FILED,
NOV 13 1890
JAMES H. McKENNEY
CLERK.

# In the Supreme Court of the United States

OCTOBER TERM, 1890.

WILLIAM H. ROBERTSON, collector, etc., plaintiff in error.
*vs.*
OSWALD OELSCHLAEGER.
} No. 86.

OSWALD OELSCHLAEGER, plaintiff in error,
*vs.*
WILLIAM H. ROBERTSON, collector, etc.
} No. 255.

**IN ERROR TO THE CIRCUIT COURT OF THE UNITED STATES FOR THE SOUTHERN DISTRICT OF NEW YORK.**

WM. A. MAURY,
*Assistant Attorney-General.*

# In the Supreme Court of the United States.

OCTOBER TERM, 1890.

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|---|---|
| WILLIAM H. ROBERTSON, collector, etc., plaintiff in error. *vs.* OSWALD OELSCHLAEGER. | No. 86. |
| OSWALD OELSCHLAEGER, plaintiff in error. *vs.* WILLIAM H. ROBERTSON, collector, etc. | No. 255. |

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**IN ERROR TO THE CIRCUIT COURT OF THE UNITED STATES FOR THE SOUTHERN DISTRICT OF NEW YORK.**

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**BRIEF FOR THE PLAINTIFF IN ERROR IN No. 86 AND FOR THE DEFENDANT IN ERROR IN No. 255.**

These are cross writs of error growing out of a suit brought by Oswald Oelschlaeger against Mr. Robertson, the late collector of the port of

New York, claiming to recover back an excess of duties alleged to have been illegally assessed and collected by the said collector on some twelve importations of instruments made between February 7 and September 25, 1884, on the ground that the merchandise imported came under the denomination of "Philosophical instruments" and was dutiable at 35 per cent. ad valorem.

The collector held the merchandise dutiable at 45 per cent. ad valorem under the clause of Schedule C, which imposes a duty of 45 per cent. ad valorem on—

> Manufactures, articles, or wares, not specially enumerated or provided for in this act, composed wholly or in part of iron, steel, copper, lead, nickel, pewter, tin, zinc, gold, silver, platinum, or any other metal, and whether partly or wholly manufactured,

and assessed duty accordingly. The importer contended that the merchandise was dutiable at 35 per cent. ad valorem under the clause in Schedule N imposing that rate of duty on "philosophical apparatus and instruments."

The action of the collector was sustained as to part of these importations and overruled as to part, and the plaintiff recovered a verdict for

$220.65 and $46.85 costs, and judgment was entered accordingly (Rec., pp. 7, 8).

These cases call for a definition by this court of the terms "philosophical apparatus and instruments," as used in Schedule N of the tariff act of March 3, 1883.

If the position taken by the importer in the court below is correct, it would seem to follow that the tariff makes no distinction between the lightning-rod, which is in general practical use, although originally employed by Franklin for a purely philosophical purpose, and the radiometer, which is of no use except to show a dynamical value in the radiation of light and heat, and is, therefore, wholly philosophical in its application.

Many of us can remember when the *camera obscura* was used entirely for the purposes of amusement and philosophical instruction, but can it any longer be said to be philosophical in character since the discovery of Daguerre? It may still be used for philosophical purposes, but would any one think of calling it a philosophical instrument, any more than he would the siphon?

The apparatus of the electric telegraph was used merely for the purposes of scientific instruction at Princeton College, by the late Professor Henry, for a considerable period before it was used as an agency for the transmission of intelligence to distant points, but surely it is unreasonable to ask that telegraph apparatus should be dutiable now as philosophical apparatus. As well might a similar claim be set up in favor of the Davy safety lamp.

There must be a distinction, it would seem, between instruments and apparatus which are used for purely scientific and philosophical purposes and those which enter into the practical concerns of life, although they may continue to be used for scientific and philosophical illustration. The instruments and apparatus constituting the necessary appliances for the electric telegraph appear to belong to the latter class, as being removed from the classification of "philosophical" in the meaning of the tariff.

It may very well be that, among a practical people like ourselves, almost entirely engrossed in pursuits that bring substantial returns, there

is wanting a sufficient stimulus to engage in the manufacture of apparatus and instruments intended for purely philosophical experimenting, and that the public good therefore requires that the importation of such things should be encouraged, but this can not be said of instruments and apparatus originally of that character, but afterwards found useful in the industries and occupations of the people; for, so soon as that becomes the case, the conditions change and there arises, in our midst, a large and not previously existing demand which our home manufacturers at once exert themselves to supply, but which they can not successfully supply unless the tariff is so administered as to bring them within its protective features, which, it would seem, the courts can not ignore without disappointing what, we think, is the legislative intention in such cases.

In Manasse *v.* Spaulding (24 Fed. Rep., p. 86) Judge Blodgett held that an instrument was none the less "philosophical" because "it had come into very general use, and is no longer an instrument used only for illustrating the principles of natural science," at the same time admit-

ting that there was some force in the argument we here urge against that view.

But the learned judge seems to have lost sight of the consideration that the tariff must be interpreted also in the light of its protective policy. True, the tariff is a law for raising revenue, but we know perfectly well that many of its impositions are laid also with a view to the encouragement of our home industries, and it would seem that we can not overlook this feature as a clew to the legislative intent without running the risk of defeating that intent in cases where the words used are not free from doubt. In Veazie Bank *v.* Fenno (8 Wall., 5 3) the court looked beyond the mere words of the law laying a tax of 10 per cent. on the circulating notes of any person, State bank, or State banking association, and recognized the fact that what was, in form, a law to raise revenue was, in truth, a legislative use of the taxing power for the mere purpose of fostering and protecting the paper circulation provided by Congress by driving out of use the circulations named in the law.

In view of that decision it would seem to be

entirely competent for the courts to give effect to the protective policy of the tariff, unless it is open to them, at this late day, to hold that that policy is without sanction in the Constitution.

After these general preliminary observations, we may now turn to the discussion of each of the cases in its order.

ROBERTSON *v.* OELSCHLAEGER.

No. 86.

The evidence being all in, the court, on motion of the counsel for the plaintiff, instructed the jury to find a verdict for the plaintiff as to the following articles, forming a part only of those covered by the request:

Exhibit 1.—Large compound microscope.
Exhibit 1½.—Prepared slides for Exhibit 1.
Exhibit 4.—Astronomical telescope on tripod.
Exhibit 11.—Reflecting mirror used in old telescopes.
Exhibit 15.—Stereopticon or magic lantern.
Exhibit 16.—Slides prepared for Exhibit 15.
Exhibit 18.—Grenet battery.
Exhibit 20 —Inductive Rhumkorf coil.
Exhibit 21.—Galvanometer.
Exhibit 22.—Geissler tube.
Exhibit 24.—Anemometer.
Exhibit 25.—Hygrometer.
Exhibit 26.—Hygrometer
Exhibit 30.—Maximum and minimum thermometer.
Exhibit 33.—Laboratory thermometer.
Exhibit 37.—Barometer.

Exhibit 38.—Barometer.
Exhibit 39.—Barometer.
Exhibit 40.—Hydrometer, for general purposes.
Exhibit 43.—Radiometer.
(Rec., pp. 19, 20.)

And being requested by the defendant to direct a verdict for him as to the following articles:

Exhibit No. 5.—Single-barreled telescope or marine glass.
Exhibit No. 6.—Double barreled field-glass.
Exhibit No. 7.—Opera-glass.
Exhibit No. 8.—Small telescope on tripod.
Exhibit No. 9.—Magnifying glass with handle.
Exhibit No. 13.—Combination of magnifying glass and stereoscope.

the court refused to give the direction asked and left the questions as to these articles to the jury. (Rec., p. 20.)

To these rulings, and every part thereof, the counsel for the defendant duly excepted. (Rec., p. 20.)

ASSIGNMENT OF ERRORS.

It is submitted that these rulings were erroneous as to many of the articles embraced by them, if the distinctions pointed out, *supra*, are well founded.

Exhibit 1, a large compound microscope, was not a philosophical instrument, for the reason, stated by plaintiff's witness, "*that it was fitted for*

*practical use.*" (Rec., p. 9.) The same objection applies to Exhibit 1½. (Rec., p. 9.)

It is not perceived that there is anything in the evidence to show that Exhibit No. 4 is any more used for observing bodies celestial than bodies terrestial; indeed we think it quite manifest that a telescope 3 feet long is of little or no scientific or astronomical value.

Exhibit No. 11 we should be inclined to think purely philosophical in character, and that the ruling below was right.

Nos. 15 and 16. The stereopticon or magic lantern does not appear to be of much scientific use, and we doubt if one is ever purchased to be used for a purely philosophical purpose. But the instrument is mostly used in giving entertainment by throwing magnified pictures or representations on a screen, or for displaying advertisements from elevated points in the streets of cities, and is hardly "philosophical" or "scientific."

No. 18. Grenet battery. The testimony seems to show that this article is almost purely philosophical. (Rec., p. 13.)

No. 20. Rhumkorf coils. These coils of wire are used to produce the phenomenon of electrical induction, and are used in illustrating that phenomenon by teachers of physics, but they are also used as a necessary part of the apparatus for exploding charges in mines, in quarries, in deepening the beds of rivers, and such like. (Rec., p. 14.)

No. 21. Galvonometer. This instrument is practical as well as philosophical. (Rec. p. 21.) It may be compared to the steam-gauge.

No. 22. Geissler tube. This appears to be a philosophical instrument.

No. 24. Anemometer. In what sense is an *anemometer* "philosophical?" You might just as well call a steam-gauge or a gas-meter philosophical, for the anemometer only tells us the velocity of the wind. In short, it measures what we knew to exist before the instrument was ever thought of and does not illustrate a single law of the atmosphere. (Rec., p. 15.)

Nos. 25 and 26. Hygrometer. This instrument enables us to learn no natural law, but simply assists us to detect the quantity of moist-

ure in the atmosphere by giving us the dew-point. The hygrometer teaches nothing that a glass of ice-water does not teach much better. But when a person, desiring to occupy a new house, wants to find out whether the plastering is quite dry, he may go with profit to the hygrometer. (Rec., p. 15.)

Nos. 30 and 33. These seem to be thermometers, useful for any purpose, scientific or otherwise.

Nos. 37, 38, and 39. Aneroid barometers, like the Rhumkorf coils, have long since ceased to be "*philosophical.*" The learned court below would have found it hard to determine that the Davy lamp should be ranked as a scientific instrument, and yet it was the result of a discovery made by a great scientist and is no more in practical use than the aneroid barometer. Surely the court would not have said that the mariner's compass was dutiable at 35 per cent. as a philosophical instrument.

No. 40. Hydrometer. The evidence (p. 17) does not show this instrument to be philosophical.

No. 43. The radiometer. This is admitted to

be a philosophical instrument. They are beautiful scientific toys. They are thus described in the Encyclopedia Britannica (vol 19, p. 249, 9th ed.):

> The typical form of the radiometer is a glass bulb, in which is hung a delicately poised arrangement of vanes. These, usually four in number, are fixed at the extremities of two light horizontal cross-rods, which are supported so as to be capable of easy rotation about a central vertical axis. The vanes or disks are set in vertical planes passing through the axis, and each has its one side bright and the other blackened. For any rotation the motion of each vane is exactly alike—that is, either the bright faces all move first, or the dark faces do so. If the pressure of the gas inside the bulb is reduced to a very low exhaustion, the vanes under the action of light or heat will begin to rotate. The mere bringing the radiometer out of a dark region into daylight is enough to set up this rotation. In ordinary circumstances the dark faces are apparently repelled, and the vanes move round with their bright faces in advance.

The black surfaces of the vanes absorbing more heat and light, and therefore radiating more heat than the burnished ones, the resistance of the rarified gas inside the bulb to the process of radiation makes the vanes rotate, just as the resistance of the atmosphere gives motion to the rocket.

This pretty contrivance of Crooke's to illustrate a previously unknown dynamical value in radiation is philosophical in the strictest sense, we should suppose.

No. 5. Single-barreled telescope or marine glass.

No. 6. Double-barreled field-glass.

No. 7. Opera-glass.

No. 8. Small telescope on tripod.

No. 9. Magnifying glass with handle.

No. 13. Combination of magnifying glass and stereoscope.

The testimony (pp. 10, 11) shows that these instruments are not scientific, and it was error in the court not to direct the jury to find a verdict for the defendant.

For the reasons stated, it would seem that there was error in the ruling of the learned judge, and that, therefore, the judgment should be reversed and the case sent back for a new trial.

OELSCHLAEGER *v.* ROBERTSON.

No. 255.

The testimony being in, the defendant's counsel asked the court to instruct the jury to find for the defendant as to all the articles in question. (Rec., p. 19.)

In answer to this request the court directed

the jury to find for the defendant as to the following articles, only:

Exhibit 2.—Small microscope for examining testile fabrics.
Exhibit 3.—Jeweler's magnifying glass.
Exhibit 10.—Piano convex lens, unmounted.
Exhibit 12.—Ophthalmoscope.
Exhibit 14.—Oculist's outfit.
Exhibit 17.—Dentist's speculum.
Exhibit 19.—Pocket battery for physician.
Exhibit 27.—Thermometer.
Exhibit 28.—Thermometer.
Exhibit 29.—Thermometer, minimum.
Exhibit 31.—Thermometer (bric-a-brac).
Exhibit 32.—Dairy thermometer and hydrometer.
Exhibit 34.—Clinical thermometer.
Exhibit 35.—Clinical thermometer.
Exhibit 36.—Pocket thermometer.
Exhibit 41.—Alcoholometer.
Exhibit 42.—Urinometer.
Exhibit 44.—Spectacle lenses.
(Rec., p. 19.)

To this direction the plaintiff excepted (Rec., p. 19).

It is submitted that there was no error in this ruling.

The articles referred to are so clearly practical and so distinctly removed from the class of philosophical, if our view of the subject, *supra*, is correct, that no argument is necessary to assist the court in arriving at a conclusion as to them.

It would seem that this writ of error presents no ground for disturbing the judgment.

WM. A. MAURY,
*Assistant Attorney-General.*

## APPENDIX.

# In the Supreme Court of the United States.

OCTOBER TERM, 1890.

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|---|---|
| WILLIAM H. ROBERTSON, COLLECTOR, etc., *vs.* OSWALD OELSCHLAEGER. | No. 86. |
| OSWALD OELSCHLAEGER, *vs.* WILLIAM H. ROBERTSON, COLLECTOR, etc., | No. 225. |

The above-entitled actions are cross-appeals.

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It is hereby stipulated and agreed between the parties to the above-entitled writs of error that the articles to recover alleged excess of duty upon which the original action (Oswald Oelschlaeger *v.* William H. Robertson as collector, etc.) was brought, were imported into New York in the year 1884 and were assessed for duty by said collector as manufactures of metals (iron, steel, copper, etc., according to the component metal they contained), at 45 per cent.; that the importer and plaintiff seasonably and duly protested against this assessment upon the ground that his said importations were only subject to duty at 35 per cent. as philosophical apparatus and

instruments, which he claimed them to be, and paid the duties exacted under this protest and to get his goods; and seasonably brought the action aforesaid to recover the exaction so by him alleged to be excessive.

It is further stipulated and agreed that said writs of error Nos. 86 and 255 may be heard together as one case.

EDWARD MITCHELL,
*United States Attorney and Attorney for Wm. H. Robertson, Collector.*
STANLEY, CLARKE & SMITH,
*Attorneys for Oelschlaeger.*
(EDWIN B. SMITH, *of Counsel.*)
WM. A. MAURY,
*Assistant Attorney-General.*

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# Supreme Court of the United States,

OCTOBER TERM, 1890.

No. 255.

OELSCHLAEGER vs. ROBERTSON.

## PLAINTIFF'S BRIEF.

### Statement.

Between Christmas, 1883, and the last day of August, 1884, the plaintiff imported into New York (Record, pp. 3, 4) various instruments which he claimed were philosophical, and so dutiable at 35% under Schedule N, Act of 1883 (22 Stats. 513) putting that rate upon "philosophical apparatus and instruments." The collector assessed them at 45%, as manufactures of metals, etc., and the plaintiff paid under protest, etc. and seasonably brought this suit.

There were forty-five exhibits introduced in evidence, upon all of which except one (No. 23, withdrawn) the Court or jury passed; as to twenty-one, being those mentioned in No. 86, the collector's writ of error in this case, and hereinbefore discussed, the verdict was in favor of the plaintiff; as to the other twenty-three, now to be considered, a verdict for the defendant was either directed or obtained. (Record, 7 top.)

The Court directed a verdict for defendant as to Ex-

hibits Nos. 2, 3, 10, 12, 14, 17, 19, 27 to 29, 31, 32, 34 to 39, 41, 42 and 44. (*Ib.*)

Upon submission of the facts to them, the jury found for the defendant as to Exhibits Nos. 7, 9 and 13. (*Ib.*)

But one witness was called by plaintiff, and none by defendant, as to the character of each exhibit, to determine its classification and whether the tariff clause imposing 35% upon philosophical apparatus and instruments was applicable thereto. (Record, 8 to 19; fols. 23 to 48.)

The pertinent facts, as to each article, can hardly be more succinctly stated than (omitting superfluous 'thats' etc.) they were in this expert witness' testimony, as follows:—

Exhibit 2 is a magnifying glass set in a brass frame above a slot, a small microscope, or magnifying glass, commonly used in the examination of textile fabrics, but which can be used for examining a number of things besides. Applied to clothing, it tells how many threads there are to a certain surface; it is usually adjusted particularly for measuring cloth, but it is used for a great many other purposes. It is usually adjusted to cover half an inch or a quarter of a square inch; witness has used it for other purposes than measuring cloth. It is used by botanists for examining leaves to ascertain how various phenomena appear within a given space. Botanists would use it for that particularly. They would merely use it, as he would understand, for examining leaves, herbs or anything of that kind. It is well adapted for that purpose.

It is used by silk-men and cotton-men in trade, for determining the number of threads to the square inch; and that, so far as witness knew, it was used principally by them; that the principal use for which it was constructed in that peculiar way, that is to say, there being a magnifying glass and a slot, was to measure and determine the number of threads in a certain area of textile fabric, the fabric being placed under the slot, on looking through a direct computation could be made of the number of threads to the square inch. (Record, 9, 10.)

Exhibit 3 is a small microscope or magnifying glass, used principally by jewelers in the manufacture of watches and jewelry in general, adapted to fit into the eye; that jewelers as a rule had to use their hands so much that they could not afford to hold the microscope by one hand and use the other, so they have it adjusted so they can stick it in the eye and work with both hands. It, however, can be used for magnifying and examining a number of other things beside jewelry. It was made for and used principally by jewelers. (Record, 10, near top.)

Exhibit 7 is an opera-glass, it is similar to the telescope, only smaller, with a lower grade of lenses; it is essentially the same as No. 6 in its construction, but with weaker lenses, and in point of fact is an opera-glass. (Record, 11 top.)

Exhibit 9 is a magnifying glass on handle, a low-power microscope or magnifying glass, and that it is used for examining everything in general. It is more particularly used for examining pictures, photographs, and things of that sort, and by experts in handwriting. It is used by every one who desires a low-power microscope; used by microscopists in getting at their articles for examination of the higher powers. There was no peculiar philosophical purposes attained by it; it is a low-power magnifying glass; it is used often in every-day life, sometimes as a burning glass; often used to gratify curiosity. (Record, 11, fol. 30.)

Exhibit 10 is a plano-convex lens used for a number of purposes, viz. in the construction of telescopes for observing heavenly bodies and also for opera-glasses. Also used in magic lanterns. Two of them placed together constitute what is called a condenser, for the condensation of light. They are not in themselves a complete instrument, but are only a portion fitted for and to be used in these particular instruments. They are for no other purpose than to be used in such instruments. This is a four or five inch lens. (Record, 11 bottom.)

Exhibit 12 is an ophthalmoscope; a practical instrument used by oculists for examining the eye and other

parts of the body. The principle on which it works is as follows: The light is reflected from a burner in front of the examiner, who holds this object to his eye, into the eye of the patient without penetrating the observer's eye, as there is only a very small hole through which it can enter; and in that way protects the observer's eye from the direct rays of the light. It is peculiarly adapted for physicians' and oculists' use. It may have other uses, but the witness is not acquainted with them. It is used in their profession for the purpose of enabling them to get at the facts by which to treat either the throat or the eye, as the case may be, practically. (Record, 12, fols. 31, 32.)

Exhibit 13 is a combination of a magnifying glass and a stereoscope. The larger lens above is nothing but a magnifying glass for magnifying photographs. Below is a combination of two magnifying glasses which are used for examining stereoscopic views, that is, two views on the same card. It produces a beautiful effect, brings out the pictures in a sort of relief, makes them appear in a more natural state than if examined with the naked eye. It is used by anybody; it presents an object that is flat upon the picture as a solid object, fills it out, and makes it appear more natural. It is used by pretty nearly everybody who wants to examine pictures and photographs. It is seen on many parlor tables, and is used for the gratification of curiosity. It is not used for scientific research nor has it philosophical value as a scientific instrument; but it is based on scientific principles and made in accordance with scientific laws; and from the fact that it is based on scientific principles witness considered it a philosophical instrument, his definition of a philosophical instrument being one that is made on scientific principles. (Record, 12, fol. 32.)

Exhibit 14 is a box containing a number of glasses and lenses ground to different angles and different power, and is an oculist's outfit, for examining the different defects of the eye. The lenses are used to correct defects in the human eye. For instance, in a near-sighted person the retina is more convex; therefore a concave lens must be used to correct that superfluous convexness of the retina. A far-sighted person or a person that suffers from weak eyes has the retina con-

tracted; therefore he must use a convex lens to counteract that defect. This box contains a series of convex and concave lenses of different powers, and there is an arrangement for fitting in these lenses and applying them to the eye, just as in an ordinary spectacle frame. It also contains cylindrical lenses used for correcting the obliquity of the eye for short-sighted or cross-eyed people, and this is a lens ground at an acute angle. If a person is very cross-eyed he has to wear a lens of comparatively greater angle; the less cross-eyed a person is, the less the angle of the lens. These are lenses of standard dimensions for the determining of what may be needed to correct the vision of any one who needs it. This is used by oculists in their profession for the purpose of finding out what the matter is with the patient's eye, and to give them a basis of facts upon which they can base their treatment, and that is its sole use. It is a practical, necessary, every-day tool for an oculist.

(Record, 12 and 13, fol. 33.)

Exhibit 17 is a dentist's speculum for examining the inside of the mouth; it has that special use for dentists and no other. It is a concave mirror, and reflects the rays of light that strike it. It is a necessary tool for a dentist, and is used for no other purpose.

(Record, 13, end of fol. 34.)

Exhibit 19 is a combination of a battery and Rhumkorf coil. It is a device used by physicians principally for treating their patients with electricity. The battery is on one side, and on the other is the induction coil which produces the electric shock on the other. In the middle there is nothing but some wires and needles. It is used by physicians in the treatment of patients for a variety of diseases. It is made in that particular form so as to be carried in the pocket. It is the necessary tool of the physician in his every-day practice if he uses electricity; and that is its main and important use. (Record, 13–14.)

Exhibit 27 is a thermometer and instrument for measuring the variations of temperature; it is based upon the principle of liquids and solids contracting and

expanding with the variations of the temperature. Thermometers have been known for a long time; they are used to a very large extent in scientific investigations. There are thermometers of different scales—the Fahrenheit, the centigrade, and the Reaumur. The centigrade scale is used principally by scientists. The principle is the same throughout. In this country, the witness thinks, in all meteorological observations the Fahrenheit scale is used. This exhibit has two scales, Fahrenheit on one side and Reaumur on the other, and is mounted on glass. (Record, 15 middle.)

Exhibit 28 is practically the same thing as No. 27, except that one is mounted on glass and the other on wood. It is the kind of thermometer bought and sold by everybody; it is not specially adapted to scientific purposes. It is hung up in every room to measure the temperature. (Record, 28, fol. 40.)

Exhibit 29 is what is called a minimum thermometer. It is filled with alcohol and is used for measuring very low temperatures—temperatures below the freezing point of mercury—and it is based upon the same principles of the expansibility and contractibility of fluids. It does not register, and is simply for temperatures below the freezing point of mercury; that is, below 110 degrees. It can be used where the mercury thermometer can not be used. It is a scientific instrument, used for scientific puposes. The principle of action is the same in each case. This tube is filled with alcohol instead of mercury. We have never been able to freeze alcohol. (Record, 15, fol. 40.)

Exhibit 31 is a small Fahrenheit thermometer. It is not a very accurate thermometer; and from the nature of its attachment it is the kind that is put on plush placques and fancy ornaments, and has not any special scientific value; it is not an accurate or reliable thermometer; it is an ordinary every-day bric-a-brac thermometer (Record, 16, fol. 41).

Exhibit 32 is a combination of hydrometer and thermometer. The hydrometer is an instrument used for measuring the density of fluids, and the thermometer is

added to it simply to measure the density at certain temperatures. The witness judges that that is a lactometer for measuring the density of milk. It is marked "Dairy thermometer"; it is used by dairymen; it is a practical instrument in their business, and that is what it is made for. It is also used by chemists. The common use to which it is put is for dairymen. It is a dairy thermometer, and it is a practical instrument in their business. It gives an arbitrary specific gravity and density; it tells them when to turn the water on.

Witness being asked what a hydrometer was, testified as follows:

An hydrometer is an instrument for measuring the specific gravity of liquids and fluids. There are two kinds. One is the hydrometer of constant volume, the other the hydrometer of constant weight. The hydrometer of constant volume is made usually out of tinned iron or out of brass. It consists of an article with a little band around the botton and a band at the top. There is a long neck on it, and on this neck is a certain mark. The hydrometer is first sunk in water and weighed with weights until the water strikes that mark exactly. Then it is taken out and placed in the liquid to be examined; the weights are adjusted until the same mark is arrived at. Then, by simple calculation, the specific gravity of the liquid can be taken, because all liquids are based upon water as a unit. Water is taken as a unit in weight—water at 40 degrees cent. An hydrometer of that sort, by the proper calculation, will get the specific gravity of any liquid. The hydrometers used for certain liquids are usually called the Baume hydrometers; they are based on a little different principle. It is weighed in water to a certain mark, which we call zero, and then a solution of salt consisting of 85 parts water and 15 parts salt is made, and the hydrometer dipped into this solution. It will now rise to another mark on the neck which Baume calls 15 degrees. Then the hydrometer is divided between zero and 15 degrees into 15 parts, and so on down the whole length of the scale. In this Exhibit No. 32 the scale is arbitrary for measuring milk (Record, 16, fols. 41 to 43).

Exhibit 34 is a clinical thermometer, a small thermometer used by physicians to obtain the temperature

of the body. There is nothing peculiar about it, except that it is only graduated to a certain limit, the limit of temperature to which the human body is apt to be subjected in case of fever. It is a thermometer graduated for use by physicians and used almost exclusively by them. The witness knows no other use except for physicians. They can be used for anything else where the range of temperature is not too high. This exhibit is only graduated to 110 degrees, and above that you would have to use another thermometer (Record, 17 top).

Exhibit 35 is another variety of clinical thermometer. It is different from the other in simply containing a magnifier. It seems to be ground at a certain angle so that it magnifies the scale when you look at it. It is used in reading. It has an index in it to see what point is reached. The other one has no index. Exhibits Nos. 34 and 35 are the every-day tools of a working physician, and especially adapted for such use (Record, 17, fols. 43 and 44).

Exhibit 36 is an ordinary Fahrenheit pocket thermometer arranged with a brass cover to it, to carry in the pocket. This is simply a form for carriage. It has no special use. It is an every-day, commonplace thermometer (Record, 17, fol. 44).

Exhibit 41 is also an hydrometer, or, more specifically, an alcoholometer, for measuring the specific gravity of alcohol. It is usually called the Trallis [Tralle's] hydrometer. It is so graduated as to determine the specific gravity of alcohol. It combines a thermometer with it to give the specific gravity at certain temperatures. It is fitted for scientific research in that respect, but it is used practically in business by dealers in alcohol and in wines and liquors. This instrument is also used in the Government service in the gauging of liquors by custom-house gaugers. It is an every-day, practical instrument, and is especially adapted for that purpose, although it may be used in scientific investigations. (Record, 18 top.)

Exhibit 42 is a urinometer. A small hydrometer con-

structed for taking the specific gravity of urine. It is used by chemists and by doctors. This one has a small cylinder to measure the quantity. This is a practical, every-day physician's instrument. It is a doctor's tool. In the present state of medical science it is almost indispensable to a physician's outfit. They use it in almost every case. It is one of the essentials to a successful diagnosis. They always start in by using that. (Record, 18, fol. 46.)

Exhibit 44 is a number of convex and concave lenses of varying degrees of strength and shape and kind, to be put into glasses or spectacles that are made for that purpose, and intended for that purpose only. They are the ordinary lenses used for spectacle glasses. They are in no sense a philosophical instrument, except that they are made on philosophical principles. (Record, 18, end of fol. 46.)

The witness on cross-examination by counsel for defendant further testified as follows:

In the standard works for students and scientists known under the title of Physics and Natural Philosophy most of these various articles are described. The greater part of them are used in schools for the illustration and investigation of natural science. A great many articles are used in demonstrating the facts of physical science in schools and colleges by professors, and to demonstrate the facts of magnetism needles and small bits of wire are used, and to demonstrate wave motion a chain is used. In fact, almost any article may be used to illustrate or demonstrate a scientific fact. Witness believes that the fact that any article may be used to illustrate a scientific principle makes it a philosophical instrument.

The definition of a philosophical instrument—"An instrument adapted and fitted for the observation, the investigation, and the recording or the illustration of natural phenomena" includes them all. A watch is a little out of philosophy; that belongs to the principle of mechanics, yet it is adapted and used for the observation and investigation and recording and for the illustration of natural phenomena.

The definition of philosophical instruments—"A philosophical instrument is one whose prime use is in

the scientific investigation of physical phenomena," partly covers it; it does not differ very much from the other definition, except that there two points left out.

Dr. Pasteur's investigations in Paris are highly philosophical. If he were going to take the temperature of the animals he is treating he would probably use a very highly accurate and fixedly [finely?] graded clinical thermometer. (Record, 18, 19; fols. 47 and 48.)

## Assignment of Errors.

In the record (Rec., 24 and 25) the plaintiff, in *extenso*, predicated error in the ruling of the Court upon each individual exhibit, as to which the verdict of the jury was against him. He now again assigns as error (separately, as to each of the above and below-named exhibits) the direction of the Court to the jury to find a verdict for the defendant (Record, 19, fols. 48 and 49) as to the following exhibits and articles, viz.:

Ex. 2. Small microscope for examining textile fabrics.
Ex. 3. Jeweller's magnifying glass.
Ex. 10. Plano-convex lens, unmounted.
Ex. 12. Opthalmascope.
Ex. 14. Oculist's outfit.
Ex. 17. Dentist's speculum.
Ex. 19. Pocket battery for physician.
Ex. 27. Thermometer.
Ex. 28. Thermometer.
Ex. 29. Thermometer, minimum.
Ex. 31. Thermometer (bric-a-brac).
Ex. 32. Dairy thermometer and hydrometer.
Ex. 34. Clinical thermometer.
Ex. 35. Clinical thermometer.
Ex. 36. Pocket thermometer.
Ex. 41. Alcoholometer.
Ex. 42. Urinometer.
Ex. 44. Spectacle lenses.

The plaintiff was allowed an exception specifically as to each of these articles. (Record, 19, fol. 49.)

II. The plaintiff also assigns as error that the Court denied his motion for a directed verdict as to these three exhibits and articles, to wit:

No. 7. Opera glass.
No. 9. Magnifying glass, with handle.
No. 13. Combination of magnifying glass and stereoscope. (Record, 20, fols. 50 and 51.)

## POINTS.

Reference to the Statement (ante, pp. 1 to 10) shows that most of the exhibits excluded by the Court from the benefit of the provision under which we claim were so shut out because their predominant use was by professional men, opticans and others, in their business; although many of them were also adapted to scientific research, and several were most frequently so employed.

For instance, the second exhibit—a magnifying glass, set in a brass frame above a slot—though commonly used to examine textile fabrics, can be used for examining a number of other things beside, "and is used by botanists in examining leaves," etc. (Rec. p. 9, fol. 26); while Ex. 29—a *minimum* thermometer, filled with alcohol, to measure very low temperatures, below the freezing point of mercury—"is a *scientific* instrument, *used for scientific purposes*" (Rec. 15, fol. 40).

Indeed, we cannot understand the ground for directing a verdict against us, as to this exhibit.

In our brief upon the collector's appeal (in No. 86) we have stated our grounds for arguing that *use* is not an element in determining the duty, *provided* the article is philosophical in its construction, principle and adaptibility; and to that statement of our views we refer (pp. 5 to 12).

We will, however, here restate our position, in one or two sentences, that its applicability to our present appeal may be more clearly perceived.

An article may possess a character seen at once not to be philosophical, whatever its use, like a piece of cloth keeping the dust from the Lick telescope; its exceptional use not affecting its general character, as this Court observed of shawls cut up for different purposes.

Maillard vs. Lawrence, 16 How.,* 262.
Curtis vs. Martin, 3 How., 109.
Lee vs. Lincoln, 1 Story, 613.
Walton vs. Tryon, Amb., 131.

Indeed, in the instance supposed, of a cloth telescope-cover, the cloth merely subserves in that particular relation *its general purpose* of a covering and protection.

On the other hand, an instrument (like exhibit No. 2, say, and the others), constructed on philosophic principles, with which the maker had to be familiar, and further utilizing them in its employment, is a philosophical instrument, although by means of it these principles are applied to the transactions of commerce or the requirements of ordinary professional pursuits. It is the application of philosophy to common life—nothing more.

The merchant who uses exhibit No. 2 to discover the character of a piece of cloth employs a philosophical instrument for that purpose, as much as Galileo did when he gazed at the heavens and made his astronomical discoveries through the medium of an opera-glass. By looking through the lenses of their respective instruments, each ascertains something he wished to know, which could not so easily (if at all) be determined mechanically or by the eye, unaided by these means for utilizing the laws of light.

The object looked at cannot affect the correct designation of the instrument employed. If philosophical when directed toward the heavens, it is none the less so when brought to bear upon the daughters of earth or mundane affairs generally; in looking upon blood-corpuscles upon an object-glass, or when mantling the cheek of beauty; in examining a microbe, or counting the threads of a textile.

Doubtless, Galileo put his opera-glass to both terrestrial and celestial uses.

Applying these observations to the several rejected exhibits, we contend that No. 2 (Rec. 9, 10; and *ante*, p. 2), is equally philosophical in its own character, *per*

*se*, whether employed by the botanist to discover the structure and organization of a leaf, or by a merchant to ascertain the texture of a cloth.

The same argument is offered as to No. 3, called the jeweller's glass (Rec. 10; and *ante*, p. 3).

Exhibit No. 10 (Rec. 11, bottom; and *ante*, p. 3), presents a different question. It is the plano-convex lens, which may be put into a telescope, opera-glass, or magic lantern, as occasion requires, to meet the wishes of the purchaser.

In this case, the question is quite different from the one decided by Robertson vs. Gerdan, 132 U. S., 454. The piano key-covers there considered were not themselves musical, nor essential to confer upon a piano the power of producing musical sounds.

They were the mere finish, or ornamentation, of the key-board. Without them, pressure upon the wooden keys would have driven their hammers against the chords of the piano, to produce its concord of sweet sounds. Music did not reside in those bits of ivory.

In the cause at bar, on the contrary, it is the lenses themselves which are philosophical. It is only through them that this character is bestowed upon the tubes in which they are inserted.

They are themselves philosophical instruments, capable of being so used, unmounted. It is only that they may be more conveniently and widely so used that they are put into tubes or frames.

They come strictly within this accepted definition of Judge Butler:—

"Such instruments as are designed to illustrate or utilize certain laws of natural philosophy, and which require for their design, *manufacture* or use some special knowledge of those laws."

Fox vs. Cadwallader, 42 Fed. R., 215 top.

"Exhibit No. 12 is an opthalmoscope." (Rec. 12, second paragraph; and *ante*, p. 3.)

"An *instrument* for inspecting the interior of the eye, invented by Prof. H. Helmholtz, and described by him in 1851."

2 Knight's Am. Mech. Dic., 1562.

The character of this invention; the necessary course of the studies and experiments which led to it; the knowledge implied of the laws of vision and of light, its reflection and refraction; the exercise of like knowledge in its manufacture and manipulation; all mark this instrument as philosophical.

To use it, the oculist must also understand these laws, and purpose to apply his knowledge; else, he could neither manipulate this instrument, nor profit by what it shows him.

The same observations apply to Exhibit No. 14—an oculist's outfit of lenses. (Rec., 12, 13; and *ante*, p. 4.)

These are *standard* lenses; for the oculist's use, not patient's.

The dentist's speculum (Ex. No. 17; Rec., 13 mid.; *ante*, p. 5) enables this occupation to profit by the philosophical knowledge implied in the invention and manufacture of this article.

"Exhibit No. 19 is a combination of a battery and Rhumkorf coil." (Rec. 13, 14; *ante*, p. 5.)

The Court held the Rhumkorf coil, by itself, to be a philosophical instrument. (Rec. 14, top.) An electrical battery must be deemed such; is so understood in common life, and in the academies and colleges where its operations are exhibited and explained. *A fortiori*, the combination is purely philosophical. The ground

for its exclusion, manifestly, was that, although philosophical, it was susceptible of, and especially devoted to, a professional use by a physician.

The subject of *applied philosophy*—the basis of the governmental discrimination—has been fully discussed.

If this test were a proper one to be applied, we should notice that the method of using this exhibit is very different from that to which the three exhibits we have just been considering (Nos. 12, 14 and 17) are adapted. These satisfy the oculist and dentist, by ocular demonstration, of the actual physical condition of the parts affected; while the physician, at best, only approximately diagnoses his patient's disease; hence, his treatment of it (especially electrically) must necessarily be, to a certain extent, empiric.

We say this is especially true of electric treatment, because even those whose studies, thoughts and efforts have been longest directed toward these subjects have acquired so little acquaintance with the nature, attributes, laws and principles of electricity and biology as to make *certainty* as to the relation of one to the other (if any there be) as yet impossible; and all suggestions in regard to such supposed relations merely speculative—though they may amount to *probable* speculation. We do not even *know* that electricity is really therapeutic. It has sometimes been conjectured, and may be true, that whatever benefit appears to follow its medical administration is attributable to psychical, rather than to its physical, influence; that it is merely the mysterious operation of the mind upon the body that promotes the restoration to health under such treatment. The only way to approach moral certainty as to the therapeutical effect and value of electricity is through the multitudinous, long-continued, experiments of different, far apart, observers; made under varying conditions and circumstances, narrowly watched, patiently and skillfully conducted, and accurately recorded, preserved and communicated; and from this mass of facts some valuable generalizations and rules may be de-

duced. In the meantime, individual cases are so many experiments; the making of which, with the purpose and result suggested, is but philosophizing upon the subject.

The testimony as to this exhibit (Rec. 13, 14; and *ante*, p. 5) makes it emphatically an example of a philosophical instrument speculatively employed in the course of professional business.

Exhibits Nos. 27 and 28 are thermometers. (Rec. 15 middle; *ante*, pp. 5, 6).

Familiarity breeds contempt. We conceive that nothing but the commonness of this instrument raises any issue as to its character. This fact, too, precludes long discussion of this issue.

This instrument resulted from the studies and experiments of academic philosophers, and is an application of their knowledge of the laws of heat, particularly as to its relative effect upon mercury.

As to comparatively recent discoveries by thermometric tests, relating to the thermal effect of chemical action, see 3 Ann. Cy. (A.D. 1878,) 90.

"It will be evident that we know nothing of absolute temperature, except theoretically; that the range of actual and possible temperatures reaches beyond our powers of detection, both upward and downward, and to an indefinite extent, so as to be comparable to an endless chain of which we can discover only so many links at some part of its course; that any temperature we may choose for our fixed point must be simply arbitrary; and yet, that by selecting two such fixed points, dividing the intervening range into a fixed number of degrees, and extending the scale by equal intervals of sensible temperature both above and below the fixed points, we introduce a sufficient and accurate means of measuring and comparing the temperatures we observe."

15 Am. Cy. (old ed.) 428.
3 Am. Mec. Dic. 698.
23 Enc. Brit. 288.

It is an instrument not only requiring close observation of changes of temperature to manufacture and correctly grade, but it is designed to indicate atmospheric changes in this particular.

Like most (if not all) of the instruments enumerated in this record, *its sole purpose is to convey information*, as a book does; and the character of the facts so indicated is philosophical, pertaining to the laws and operations of nature. This is not true of a tool; a hammer, lancet, churn, loom, or other piece of machinery. It is an instrument whereby philosophic investigations, more or less intricate, are conducted. Very few consult thermometers for real, present, practical use of the information they give; but rather from motives of curiosity, and for comparison, of the natural phenomenon indicated.

It will be observed that these exhibits were *double-graded*; having not only the common Fahrenheit, but also the Reaumur, scale; indicating a design to supply a scientific want. (Rec. 15, fol. 40.)

Most emphatically is what we have just above observed true of Exhibit No. 29—a *minimum* thermometer. (Rec. 15, fol. 40; and *ante*, p. 6).

It is filled with alcohol, to measure temperatures so low that mercury fails us for the purpose. None of the ordinary, unphilosophical pursuits of life call for it. It is useful only to him who is investigating the phenomena of nature, to determine causes, and comprehend its laws—the philosopher.

"IT IS A SCIENTIFIC INSTRUMENT, USED FOR SCIENTIFIC PURPOSES." (Rec. 15, bottom; *ante*, p. 6.)

"The spirit thermometer is now little used excepting for observations of very low temperatures, or as a self-registering instrument for meteorological observations."
Brande's Dic., 1239.

Why *should* Congress require *more* than 35% of its cost to be paid into the public treasury in a time of profound peace?

Exhibit No. 31 is still a thermometer, although not graded with perfect scientific accuracy, nor calculated for scientific use, but to be ornamentally mounted. Yet in whatever garb dressed, whether in homespun or royal purple, it is essentially a philosophical instrument. The ornamentation may enhance its market value, and so increase the *amount* of duty to be paid; but it cannot alter the essential characteristic from which it derives its name, and so change its classification for duty. (*Ante*, p. 6.)

"Exhibit No. 32 is a combination of hydrometer and thermometer," marked "Dairy Thermometer," and used by dairymen in their business, etc. "*It is also used by chemists.* It gives an arbitrary specific gravity and density." (Rec. 16; and *ante*, p. 6.)

This exhibit squarely raises the question whether or not an instrument, unquestionably philosophical in its origin, structure and design, can be deprived of that *actual* character by the mere fact that its construction permits the philosophic principles it represents to be applied to industrial or commercial affairs.

It is used to determine the changing density of a fluid (milk only, if you please) at different temperatures; to indicate the relation between temperature and density; the effect which the natural operation of heat has upon density; and, by comparison and record, to observe whether, at the same temperature, to-day's milking is thicker or thinner than another day's; from which conclusions may be drawn as to the condition of the cow, the eligibility of her pasture or feed, etc., etc.

Suppose the end aimed at be ignominiously practical, or even venal; yet the means of its attainment are philosophical. There is the application to the dairy business of a knowledge of the laws which govern the operations of nature, the effect of heat, etc.

The churn is a mechanical instrument, performing mechanical work, conveying no information to the mind of the dairyman; while this exhibit is *philosophically* constructed to illustrate a fact the existence of which he first learns in the study of natural philosophy. It is a philosophical instrument employed in a business operation.

Dr. Draper wrote;

"I join, as doubtless all *natural philosophers* will do, in the pious prayer of Alhazen that 'in the day of judgment the All-Merciful will take pity on the soul of Abu-r-raihan, *because he was the first of the race of men to construct a table of specific gravities.*"

No matter whether the gravity sought is that of milk, alcohol or urine: 35% upon the instrument that gives it is enough.

Exhibits Nos. 34 and 35 are clinical thermometers. (Rec. 17 top; and *ante*, pp. 7, 8.)

If ordinary thermometers are *not* philosophical, the particular use to which their limited scales practically confine these exhibits may (or may not) make them philosophical; but if the common thermometer is a philosophical instrument, then these clearly are so; for their use is purely scientific.

Replying to a juror's question (Rec. 19, fol. 48) the witness said:

"Doctor Pasteur's investigations in Paris are *highly* philosophical. If he were going to take the temperature of the animals he is treating, he would probably use a

very highly accurate and fixedly [finely ?] graded clinical thermometer."

This, however, makes it only a matter of degree; of the height of the philosophic plane. If it be philosophical to take the temperature of a dog or a rabbit with a very accurate tube, it is none the less so to take that of a sick man with one less expensive, elaborate and accurate. It might somewhat affect the nicety of the experiment, but not its general character. The first rude instrument of Galileo was no less *philosophical*, though far less effective, than the best that ever left the hands of Lemaire or Chevalier.

We have heretofore spoken of the necessarily experimental character of medical treatment; how much it depends upon the collating of facts, recording of observations, etc., etc.; all tending and intended to solve the natural laws of health and disease; to determine the relation of medicaments to the human system and its various functions. The doctor does not need any thermometer to tell him a patient has fever; nor to learn that alcohol will heighten, or the sweet spirits of nitre allay, it;—but to know just how the fever progresses; to compare yesterday with the days preceding and with to-day; above all, to compare this patient's case, under ascertained conditions, with former experience and with the recorded instances and treatment of other physicians; to see just *how much* stimulants raise, or febrifuges diminish, the temperature;—in short, to treat the subject and the man scientifically and *philosophically*, clinical thermometers are necessary.

That their raison d'etre is to aid in the preservation of life and the restoration to health does not detract from, but heightens, their philosophic character and value; and would naturally induce Congress to consider thirty-five cents upon every dollar of the price of such an instrumentality a sufficient contribution to the public treasury.

"Exhibit No. 36 is an ordinary Fahrenheit pocket-thermometer; arranged with a brass cover to it, to carry in the pocket." (Rec. 17, fol. 44: and ante, p. 8.)

It must be conceded that very few (if any) persons, except those of scientific taste and philosophic mind, would care to be provided with such an instrument, as a constant companion; to indicate to its owner the comparative temperatures of days passed in distant places and climes, or under widely-varying conditions and circumstances; say, as his car mounts The Great Divide, or he descends to the lowest level of the Comstock.

Thirty-five cents out of every dollar it cost ought to suffice.

Exhibit No. 41 is a hydrometer, combined with a thermometer, (usually called the Tralle's hydrometer) graduated with special reference to obtaining the specific gravity of alcohol, at different temperatures; therefore more specifically known as an alcoholometer. It is adapted to use in scientific investigations; also used in gauging and other commercial operations. (Rec. 18 top: and ante, p. 8.)

However employed, it is based upon and illustrates the principles of natural philosophy, some acquaintance with which is necessary in its manufacture; and is "an instrument adapted and fitted for the observation, the investigation, and the recording or illustration of natural phenomena." (Rec. 18, bottom.)

IX Am. Cy. 124–5.
1 Knight's Am. Mech. Dic. 59.
Knight's *New* M. Dic. 1153–4; "Hydrometer."

By comparing this and the next exhibit (42) with the one preceding (No. 40) which was a hydrometer not

graduated for any particular liquids, but for general purposes, (Rec. 17, 18; our brief in No. 86, page ) we emphasize the distinction drawn by the government and sanctioned by the Court, that if an instrument were vaguely general in character, it was philosophical and could come in at 35 %; but if it was specially adapted to subserve any particular, useful purpose (although its general idea and character is the same) it must pay ten per cent. more! Hence, as to Exhibit No. 40, which could be equally well used for any liquid, a verdict was directed in our favor; while, as to exhibits Nos. 41 and 42, specially designed for application to alcohol and urine, a verdict was directed against us; as it was with respect to the lactometer—Exhibit No. 32. (Rec. 16, fol. 41; *ante*, pp. 6, 8.)

Exhibit No. 42 is also an hydrometer; particularly constructed with reference to taking the specific gravity of urine; hence more specifically known as a urinometer. It is used by chemists and indipensable to physicians. (Rec. 18, fol. 46; and *ante*, p. 8.)

So far as use is a circumstance to be considered (if at all) we may observe that this instrument is not concerned in the affairs of trade and commerce. It is the implement of a learned profession, in pursuing scientific investigations by philosophic means, as a basis of reasoning and conclusion, directed toward the preservation of life and health; and not to ascertain qualities or attributes of commercial value.

35% is enough.

Exhibit No. 44; lenses, convex and concave, of varying strength, for spectacles; whose claim to come in as philosophical instruments the witness rested upon, and confined to, the circumstance that "they are made on

philosophical principles." (Rec. 18 middle; and *ante*, p. 9.)

These are philosophical in respect of requiring familiarity with the laws of light for their manufacture, and for their adaptation to the eye that is to look through them.

It may be further remarked that almost their entire value consists of the philosophical knowledge they represent. As to the raw material (glass) in them, the value is so trifling as to fall within the maxim *de minimis*, etc. It is the philosophic manipulation of this cheap material that gives these articles their value, and which is taxed. The 35% is practically placed upon scientific knowledge.

Coming down from the time of Ptolemy to the revival of learning and science under the Saracens, we find that Alhazen, in the twelfth century, wrote on the refraction of rays and the magnifying power of lenses. Draper's remark here is too good to omit.

"I join, as doubtless all natural philosophers will do, in the pious prayer of Alhazen that 'in the day of judgment the All-Merciful will take pity on the soul of Abu-r-Raihan, because he was the first of the race of men to construct a table of specific gravities;'—and I will add Alhazen's name thereto, for he was the first to trace the curvilinear path of a ray of light through the air."

2 Knight's Am. Mec. Dic. 1287, "Lens."

As to six exhibits, the issue was left to the jury, who found for the defendant as to Nos. 7, 9 and 13; being an opera-glass, a magnifying glass or low-power microscope, and a combination of magnifying glass and stereoscope. (Rec. 11 top and fol. 30; 12, fol. 32; also *ante*, pp. 3, 4.)

There being only the testimony of one witness, unchallenged in his statement of facts, it was error to leave this question to the jury at all. A verdict should

have been directed, as requested. Each party presenting such request was a concession that no issue of *fact* was raised.

Kirtz vs. Peck, 113 N. Y. 226.

To submit a question of law to the jury is error.

Hickey vs. Ryan, 15 Mo. 267.
U. S. vs. Carlton, 1 Gall. 400.
Thomas vs. Thomas, 15 B. Mon. 178.
Ragan vs. Gaither, 11 G. & J. 472.

We excepted to the refusal to direct a verdict in our favor as to these articles. (Rec. 20, beginning of fol. 51.)

Exhibit No. 7 is an opera-glass. (Rec. 11 top; *Ante*, p. 3.)

The witness said it was similar to the telescope (Ex. No. 6, as to which we had a verdict) only smaller, with a lower grade of lenses. (*Ib.*)

Comparing Exhibits 4, 5 and 6 (as to the first of which we had a directed, and as to the latter two a voluntary, verdict) with this Exhibit No. 7, he observed there was apt to be "a *little difference* in the lenses between each;" concluding that "No. 7 is *essentially the same* as No. 6 in its construction, but with weaker lenses; and, in point of fact, is an opera-glass." (*Ibid.*)

This verdict is another instance of the contempt bred of familiarity. The jurors could not comprehend how so common an instrument, so frequently used by them, could be philosophical; any more than M. Jourdain could that he had been talking prose for more than forty years without knowing it.

Yet it was such an instrument that Galileo invented, and with which he prosecuted his astronomical researches; commencing with weak lenses, the strength

of which he subsequently increased, but not to the degree attained now in the opera-glass in common use.

"Opera-glass. A binocular telescope of the kind invented by Galileo, and with which that *philosopher* first observed the planetary disks and Jupiter's four moon's."

2 Knight's Am. Mech. Dict. 1562 top.

"The common opera-glass is nothing else than the Galilean telescope, invented by Galileo in 1609, which was the first ever employed for exploring the heavens."

Brande's Dict. 851, *h. t.*
*Id.* 1228, tit. Telescope.

Is it not more than probable that if, instead of being actually shown to the jury, it had been orally fully and correctly described to them (as to the nature, position, relation and effect of the lenses) under the name of "the Galilean telescope," and they informed how the name was derived, and what discoveries the inventor made with it, that the verdict would have been the other way, and have declared the instrument to be philosophical—as it *is*, in fact.

It was invented by a philosopher; to accomplish a philosophic purpose in the prosecution of his study of natural philosophy; made in accordance with and based upon a knowledge of the laws of light and of vision; that purpose being to bring within the range of distinct vision things theretofore beyond it. His purpose was, in effect, to bring distant things near (for all the purposes of sight); that the hidden might be revealed.

That he invented this instrument to look at the heavens is immaterial. It was the well-understood and inevitable consequence of its construction that if he, or anybody else, desired to bring to more distinct perception earthly objects, this instrument would have that effect, the same as when directed toward Jupiter or the moon. No doubt Galileo himself, after he had per-

fected it, looked through it twenty times at persons and things in and about Pisa and Padua, for once that he turned its lenses toward the sky. In either use, and by whomsoever used for either purpose, the instrument itself was (and is) philosophical.

From its common use important results, in the sphere in which he first employed it, may flow. The author of the recent work (Appletons', A. D. 1888) " Astronomy with an Opera-Glass " (Serviss) notices in the first page of his introduction that such telescopes are owned and used *often* to very good purpose by persons not practical astronomers, but who wish to see for themselves the marvels of the sky, and who occasionally stumble upon something that is new even to professional star-gazers.

Exhibits Nos. 9 and 13 were magnifying glasses; the first having a handle, and the other being combined with a stereoscope. (Record, 11, fol. 30 and 12, fol. 32; *ante*, pp. 3, 4).

Like the opera-glass, these are well-known, commonly-used instruments; these being of less pronounced philosophic characteristics than the Galilean telescope, and less susceptible of being put to uses purely philosophic; but in their construction, object, effect, and use, they are based upon and illustrate the principles and laws of natural philosophy.

They are educational in their tendency, and may well be deemed by Congress sufficiently taxed at 35%.

They come within that construction of the tariff phraseology which let in the photographic-slides of Harvard college free, as already noticed.

16 Atty.-Gen. Op. 486.

Most of the exhibits, which we have now gone over

seriatim, are described in the standard works for students and scientists, under the title of Physics and Natural Philosophy, and are used in schools for the illustration and investigation of natural science. (Rec., 18, fol. 47).

Those so described and used would, if brought in by a college, school or church, be entitled to free entry; and, certainly, whatever is allowed to be specially imported free (as philosophical) must be permitted to come in at 35%, when imported commercially, as an article of merchandise.

That, when commercially imported, they may be dedicated to the requirements of commerce, art, science, or any of the professions—so as not to be directly employed as educational toward or by anybody but the owner—does not at all militate against our position, as we have already noticed; since it is the individual, non-educational (construing this to mean knowledge not communicated to another) use that subjects these articles to duty. A corporate use, extending their teachings to others than the owner, lets them in free.

Looking at these exhibits collectively, in the light in which they have been severally examined; considering the kind of knowledge and skill required to make them; the uses they subserve; the benefits accruing from their use,—the more widely diffused the more general the use,—would not any one, reasoning a *priori*, declare that thirty-five cents upon every dollar of their market value would be all the contribution to its revenues which a wise government, in a time of profound peace and abundant income, would demand as a condition of bringing *such* articles into the country?

If such a conclusion is reached because of their

peculiar character, is it not that this character is philosophical?

Did not Congress intend the widest scope to be given this term, in order to embrace everything tending to promote the spread and facilitate the conduct of scientific investigation in the various pursuits of life; to encourage the *experimental* acquisition and verification of such information as is theoretically given, or hypothetically suggested, in books pertaining to one or other of the numerous branches of natural philosophy?

We already hear, in anticipation, the government's slogan of "Protection to Home-Industry," which we feel assured will be raised in this case, because now-a-days it is in every case.

The uniform reply is one that readily suggests itself. Suppose the Congress of 1883 did desire to protect domestic manufactures of this character; the question still recurs, how, and to what extent, did it vouchsafe such protection: certainly, only to that extent which a natural construction of the language employed will afford it. If the ordinary meaning of a tariff provision will place 35% upon a telescope or other article, we are not to narrow that provision, and strain another, to put 45% upon that article, in order to protect home-industry by mere construction, and because 35% does not exclude the article altogether.

There is no reason, historical or other, that we are aware of, to justify the assumption that the Tariff of 1883 was intended to be *prohibitory*, in order to be absolutely protective. If not, then talk about protecting the domestic manufactures of microscopes, compound or otherwise, telescopes and opthalmoscopes, galvanometers and urinometers, is inappropriate; since it comes to this only, that Congress has protected them just so far as the applicable provision protects, and no

farther. There can be no *judicial* desire to do aught but ascertain the provision which is *the* applicable one, whether it protects more or less; and no doubtful interpretation will increase the burden upon the citizen.

Hartranft vs. Weigmann, 121 U. S., 609, 616.

The mere fact that one section imposes ten per cent. more duty than another is no judicial ground for applying the former rather than the latter—but the contrary, for the reason just given.

## II.

Unless the Court is satisfied that (as to Exhibit 29 and all the other exhibits brought to its attention by our writ of error), as matter of law, no verdict in our favor could be sustained, it was error in the Court to direct a verdict for the defendant thereon.

EDWIN B. SMITH,
Of Counsel.

CHARLES CURIE,
Attorney.

Nos. 86 and 255. October Term, 1890.

# In the Supreme Court of the United States.

Wm. H. Robertson, Collector, Plaintiff in Error,

*vs.*

Oswald Oelschlaeger, Defendant in Error.

Oswald Oelschlaeger, Plaintiff in Error,

*vs.*

Wm. H. Robertson, Collector, Defendant in Error.

ERROR TO THE CIRCUIT COURT OF THE UNITED STATES FOR THE SOUTHERN DISTRICT OF NEW YORK.

## ADDITIONAL BRIEF ON BEHALF OF DEFENDANT IN ERROR IN No. 86 AND PLAINTIFF IN ERROR IN No. 255.

FRANK P. PRICHARD.

*Allen, Lane & Scott, Prs., Phila.*

# In the Supreme Court of the United States.

October Term, 1890. Nos. 86 and 255.

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|---|---|
| *William H. Robertson, Collector,* vs. *Oswald Oelschlaeger.* | No. 86. |
| *Oswald Oelschlaeger* vs. *William H. Robertson, Collector.* | No. 255. |

## Additional Brief filed on behalf of Defendant in Error in No. 86, and Plaintiff in Error in No. 255.

The single question raised by these cases is whether certain articles which derive their usefulness and value from the fact that they are manufactured by persons skilled in the laws of natural philosophy and are adapted to utilize or illustrate those laws shall be classed together as philosophical instruments, subject to a duty of thirty-five per cent., or whether the duty to which each is subject shall depend in every instance on the particular substance which enters most largely into its composition.

None of the articles involved in the present case are specifically mentioned in the tariff act, nor is it pretended that there is any other class than "Philosophical Instruments," which includes them all. What the Government claims is

that they are to be taxed according to the particular substance of which each article is composed; so that an aneroid barometer is to be classed as a manufacture of metal, while a marine barometer is to be classed as a manufacture of glass or wood, and an opera glass is to be classed as a manufacture of leather or pearl or metal, according to the accident of the composition of its frame.

The contention of the Government will lead to an absurd result, since articles whose value depends not upon the leather or glass or metal of which they are composed, but upon the philosophical skill with which they are constructed, will nevertheless be taxed according to the mere incidental circumstance of their component materials. Such a construction is of course to be avoided, if possible. Is it necessary in this particular case?

That Congress intended to group together in the tariff act a class of articles which had for their distinguishing and common feature the utilization or illustration of philosophical laws, is clear from the fact that a duty is imposed specifically on philosophical apparatus and instruments. Nor was this class specially favored by a light duty, since the rate (thirty-five per cent.) was precisely the same rate as was put on cutlery and on cabinet ware and furniture. If indeed the philosophical instruments were imported for the use of societies established for philosophical, educational, literary, or scientific purposes, then they were admitted free of duty; but if imported for the ordinary uses of life, the rate was thirty-five per cent. It will thus be seen that the grouping together of articles under the general head of philosophical instruments was from no desire to encourage the study of philosophy by a low tariff, but simply to place in the same class articles which naturally grouped themselves together, articles which required philosophical skill in their manufacture and derived their principal value from that skill, and which therefore were generally made and dealt in together, irrespective of the materials of which they were composed. It being clear, therefore, that Congress did not use the term "philosophical instruments" in the sense of instruments intended to encourage the study of

philosophy, but used it as the general name of a class of commercial articles, the question next arises, what does this term ordinarily include. It will not do to say the term includes only those instruments which are used to teach philosophy. It often happens that it is the desire to accomplish some useful and practical object which leads to the invention of a philosophical instrument, and that before it is shown to the student to illustrate the operation of the laws of natural philosophy it has already been applied to the practical utilization of those laws. The same thermometer which is used in the school room may be used for the practical indication of temperature. The same microscope that is shown to students may be the next day employed to determine the texture of a commercial fabric. It would be absurd to tax one microscope as a philosophical instrument because it was intended to be used by a professor in a school, and another exactly identical microscope, as a manufacture of brass because it was intended to be used in the laboratory of a large manufacturing establishment. To define philosophical instruments as those instruments which are employed solely to *teach* philosophy, is not only to exclude almost all the important instruments which are mentioned in every book on Natural Philosophy, and are found in nearly every laboratory, but it is also to include many of the accessories of a laboratory which are not philosophical instruments, but which are employed by the professor to illustrate or teach philosophy.

It is submitted that the most satisfactory definition is that adopted by the court in the case of Fox *vs.* Cadwalader, 42 Fed. Rep., 209, viz.: "A philosophical instrument, as the words are used in the tariff act, means such an instrument as is designed to illustrate or utilize certain laws of natural philosophy, and which requires for its design, or its manufacture, or its use, some special knowledge of those laws."

This definition is broad enough to include the whole class of instruments which derive their value from the special philosophical skill of the manufacturer and not from the mere manipulation of the materials of which they are composed, while on the other hand it is not so broad as to cover articles

which, although requiring no such skill for their manufacture, may yet be used in the school-room or the lecture platform to illustrate the operation of natural laws.

Perhaps no better practical illustration can be found of the extent and limitation of this class of instruments and of the meaning of the term philosophical instruments, as ordinarily used by intelligent men, than in the arrangement of the Centennial Exposition held in the United States in 1876. This arrangement has become matter of history, and is preserved in the official catalogue published in 1876 and to be found in every large library.

The classification of articles is found on page 27 of volume 1. There were seven departments, viz.: first, Mining and Metallurgy; second, Manufactures; third, Education and Science; fourth, Art; fifth, Machinery; sixth, Agriculture; seventh, Horticulture. Under the head of Department 3, Education and Science, there were five subdivisions, viz.:—

First, Educational systems, methods, and libraries.

Second, Institutions and organizations.

Third, *Scientific and philosophical instruments* and methods.

Fourth, Engineering, architecture, charts, maps, and graphic representations; and

Fifth, Physical, social, and moral condition of man.

Under the subhead of "Scientific and philosophical instruments and methods" are found:—

"Instruments of precision," including astronomical instruments, nautical instruments, meteorological instruments and apparatus, thermometers, barometers, &c.

"Indicating and registering apparatus," including gas-meters, water-meters, &c.

"Weights, measures, weighing and meteorological apparatus," including scales, measures, hydrometers, alchometers, &c.

"Chronometric apparatus," including chronometers, clocks, watches, &c.

"Optical and thermotic instruments, and apparatus," including microscopes, telescopes, field-glasses, opera-glasses, &c.

"Electrical apparatus," including galvanic batteries, induction machines, &c.

"Telegraphic instruments and methods," including batteries, conductors, electrographs, &c.

"Musical instruments and acoustic apparatus," including pianos, wind instruments, &c.

It will be observed that this classification includes "clocks" and "musical instruments." These are strictly philosophical instruments, although they are made in such quantities as to become special branches of manufacture and are specially enumerated in the tariff act, the duty on clocks being placed at thirty per cent and that on musical instruments at twenty-five per cent.

All the articles in the foregoing list derive their value from the skill with which they are made to utilize or illustrate the laws of natural philosophy. It is not the ordinary skill of the worker in metal or leather or glass that gives them their special value, but the skill of the scientist familiar with the laws of natural philosophy. They constitute a distinct class of the world's manufactures. They ought properly to be classed for taxation under one head. No better term could have been selected by Congress to designate them than the term "philosophical instruments." This term does not conflict with any other class terms in the tariff act, as is evident from the fact that none of the articles in suit are alleged to come under any other classification, except, of course, the classification under the drag-net material clauses which are intended to gather in all articles not more specifically enumerated. To tax the articles in question under these various drag-net clauses will cause inequality and confusion; to tax them under the philosophical instrument clause will produce uniformity and system. It is submitted that such a construction should be given to the words "philosophical instruments" as will best secure a reasonable and uniform operation of the act.

FRANK P. PRICHARD.

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# Supreme Court of the United States,

OCTOBER TERM, 1890.

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|---|---|
| WILLIAM H. ROBERTSON<br>vs.<br>OSWALD OELSCHLAEGER. | No. 86. |

## BRIEF FOR DEFENDANT IN ERROR.

### Statement.

At various dates during the year 1884, the plaintiff below imported into New York, of which port defendant below was collector of customs, a large number of articles, of which forty-four samples were put in evidence at the trial of this cause below, December 10, 1885, and designated numerically as exhibits therein.

The importer claimed all his importations to be dutiable under the Act of March 3, 1883, Schedule N, as

> " Philosophical apparatus and instruments, 35%.
> (22 Stats. 513.)

The collector assessed them all at higher rates, as manufactures.

As to articles represented by twenty of the exhibits, the Court directed a verdict for the plaintiff, which the jury accordingly so found; and also found for plaintiff, upon the question of fact left to them, as to three other exhibits, Nos. 5, 6 and 8.

It is the correctness of these directions and of the

submission to, and decision of, the jury that is challenged by the Collector's writ of error, No. 86, of this term.

The articles thus determined to be dutiable as philosophical apparatus and instruments, as claimed by the importers, are the following, numbered as exhibits, as they were introduced in evidence :—

Ex. No.

1. Large compound microscope.
1½. Prepared slides for same.
4. Astronomical telescope on tripod.
5. Single-barrelled telescope.
6. Double-barrelled field-glass.
8. Small microscope on tripod.
11. Reflecting mirror, used in old telescopes.
15. Stereopticon, or magic lantern.
16. Slides, prepared for Ex. 15.
18. Grenet battery.
20. Inductive Rhumkorf coil.
21. Galvanometer.
22. Geissler tube.
24. Anemometer.
25. Hygrometer.
26. Hygrometer.
30. Maximum and minimum thermometer.
33. Laboratory thermometer.
37. Barometer.
38. Barometer.
39. Barometer.
40. Hydrometer, for general purposes.
43. Radiometer.

Only one witness was called by plaintiff, and none by the United States Attorney.

Put in a narrative form, the testimony, as to each of the above-specified exhibits, was in substance (omitting many "thats" and other superfluous words, and some repetitions) as indicated in that portion of this brief (*infra*, pp. 12 to 33) which discusses the individual character of the several articles upon which the plaintiff below recovered.

## POINTS.

This case rests upon the testimony of the single witness introduced by the original plaintiff.

Furthermore, each party moved for a directed verdict; thereby conceding (certainly, as to every exhibit except the half-dozen submitted by Judge WHEELER to the jury) that there was no dispute about the facts, but only a question of law presented thereon.

Was the correct legal effect accorded by the Court to the evidence?

Anderson v. Beal, 113 U. S. 241-2.
Kirtz v. Peck, 113 N. Y. 226.

We say it was, as to those articles for which the importer had a verdict. These all come within this definition of a philosophical instrument, elicited from the witness upon *cross*-examination:

"An instrument adapted and fitted for the observation, the investigation, and the recording or the illustration of natural phenomena." (Rec. 18, fol. 47.)

Judge BLODGETT expresses this view; —

"When an instrument or apparatus involves the illustration of some principle of natural philosophy or natural science, it may be properly termed 'a philosophical instrument' within the meaning of this clause."

Manasse v. Spalding, 24 F. R. 86.

In a case tried a year ago, Judge BUTLER instructed the jury, if they found the name "philosophical apparatus or instruments" was not a trade term, then it is to be understood as used by Congress in the ordinary signification of the word; "and, in that event, *you will find the term to include such instruments as are designed to illustrate* OR UTILIZE *certain laws of natural philosophy, and which require for their* MANUFACTURE *or use special knowledge of these laws.*"

Fox v. Cadwallader, 42 Fed. R. 212.

The government seems to have accepted this definition, as we find no appeal of this case upon this term's docket of this court.

Lexicographers define philosophy, generally, as the knowledge of phenomena. To philosophize is to search into these phenomena, to discover the nature and reason of things; usually, by comparison of an accumulation of individual instances. A natural philosopher is one versed in knowledge of the facts of nature and the laws deduced from observation of them. Any instrument or apparatus designed to aid the human eye and mind in the perception of such facts and the deduction therefrom of uniform natural laws, and in the application of such laws when known, is a philosophical instrument, regardless of the purpose in acquiring such knowledge, or the use made of it. The instrument, or instrumentality, of its attainment is philosophical.

Picking up the old Olmstead's Natural Philosophy of boyhood (published A. D. 1848) we find the author thus defines his subject, at page 17, italicizing as below:

"NATURAL PHILOSOPHY *is the science which treats of the Laws of the material world.* . . . . The term *law*, as here used, signifies *the mode in which the powers of nature act.* Laws are *general truths*, comprehending a great number of subordinate truths."

Instruments framed to illustrate, discover, observe, record, or demonstrate these truths, general or subordinate, or made in accordance with them, are philosophical.

The course recommended by the late much-lamented Judge MILLER (in Davidson v. N. O., 96 U. S. 104) with regard to the phrase 'due process of law' may perhaps be adopted by the court as to the tariff term under consideration; and the inquiry may be confined to deciding whether or not each exhibit is or is not a 'philosoph-

ical instrument' rather than to fixing upon some abstract definition of the term to be applied to articles outside of, as well as within, the present record.

Should the Court confine its examination to those things only which are mentioned in this transcript, it would be profitless to inquire, even arguendo, whether or not other things, not enumerated here, nor the subject of any known controversy, are or are not philosophical, with any view of instituting a comparison between them and the articles which are involved in the present litigation.

From the tenor of former discussions, we infer the attorney-general (whose brief has not yet reached us) will mainly direct his argument to the consideration whether or not each exhibit is (or is not) susceptible of, and actually put to, practical use in the exercise of any trade or profession of every day life; and, if it is, will deny its philosophical character.

We do not assent to this proposition.

"The subsequent *use* of the thing, as it does not alter the *nature* of it, cannot add a tithable [dutiable] quality to it which it had not before; if it could, why not *vice versa?*"

Walton v. Tryon, Ambl. 131.

The Court there held that tithes were not payable of any loppings of oak or ash, because these were timber trees; but would be of maple, because it is not; even though the former were in fact lopped for fire-wood and the latter for use as timber.

Everything properly included within the terms or designations of a tariff is dutiable at the specified rate, irrespective of the use to which it is applied; however variant the uses of the included article may be; even if, as to some of these uses, the designated article may

supplant or take the place of one dutiable at a higher rate.

Curtis v. Martin, 3 How. 109.
Lee v. Lincoln, 1 Story, 613.

TANEY, C. J., giving the opinion in the first of the above cited cases, A. D. 1844, observed;—

"It has long been a settled rule of construction of revenue laws, imposing duties on articles of a specified denomination, to construe the article [statute?] according to the designation of such article, as understood and known in commerce, and *not with reference to the materials of which they may be made*, OR THE USE TO WHICH THEY MIGHT BE APPLIED.

Curtis v. Martin, 3 How. 109.
Arthur v. Cumming, 91 U. S., 364 top.

The name of the article, in its first creation, may be and most frequently is derived from and indicates its intended use, as parasol, telegraph, etc.; but an established tariff nomenclature covers included articles, irrespective of the various methods of using them. The same rule applies, whether the tariff designation be by a single commercial term or by a descriptive phrase.

It may be parenthetically remarked that the direction of court, as to the articles embraced in the collector's appeal (No. 86), also conformed to the rule that, as between two or more designations sufficient to embrace an article, the most specific must alone be deemed applicable. (See the numerous cases in 96 U. S. and other volumes.)

Whenever Congress desires to make *use* the determining consideration that purpose is explicitly declared; as may be seen in numerous instances, most pertinently in that affecting the use of philosophical instruments, etc.

For example ; —

"Articles used or intended to be used as coffee." Bagging and manufactures "suitable to the uses for which cotton-bagging is applied." "Pulp, dried, for paper-makers' use. Feathers of all kinds, 25% ; when dressed," including birds, "for millinery ornaments" and artificial, etc., flowers "for millinery use," 50%. "Upon proof that the salt *has been used* for either of the purposes stated in this proviso," the duties shall be remitted. "Acids used for medicinal, chemical, or manufacturing purposes," free. "Phosphates, crude or native, for fertilizing purposes." "Animals," brought in temporarily, "for the purpose of exhibition," etc. ; "for breeding purposes ;" "and in actual use for the purpose of such emigration." Books, etc., for use of U. S. ; of the Library of Congress ; or of any society, philosophical, literary or religious ; or of any college, etc.

Let us now see what the course of legislation has been as to duties upon philosophical apparatus and instruments; especially with regard to the use to be made of them.

Prior to the Revision it would seem that no duty was placed upon them *eo nomine* (except the *additional* ten per cent under § 6 of the act of 1862 ; 12 Stats. 550) but they were assessed at the rate put upon their component of chief value, unless free because imported specially for some society, etc.

In the second tariff-act passed, approved Aug. 10, 1790, free entry was accorded to "philosophical *apparatus*, specially imported for any seminary of learning." (1 Stats. 181.)

The second section of the act of April 27, 1816, c. 107, extended this exemption to "philosophical apparatus, *instruments*, books, maps," etc., etc., "specially imported by order and for the use of any society incorporated for philosophical or literary purposes, or for the encouragement of the fine arts, or by order, and for the use of any seminary of learning." (3 Stats. 313.)

Same in act of Sept. 11, 1841, c. 24, § 1 (5 Stats. 463);

Act of Aug. 30, 1842, c. 270, § 9 item Fifth (*Id.* 560, bottom).

The act of July 30, 1846, c. 74 (9 Stats. 42 *et seq.*) did not mention them by name, as either dutiable or free; but that of March 3, 1857, c. 98, § 3, restored to the free list "all philosophical apparatus, instruments, etc., . . . specially imported in good faith for the use of any society," etc., etc. (11 Stats. 193 bottom.)

The act of March 2, 1861, c. 68, § 23, after exempting all articles imported for the United States, repeated the exemption of philosophical apparatus, etc., in the language above-quoted from the preceding statute. (12 Stats. 193 middle.)

As above noticed, the sixth section of the act of 1862, c. 163, (*Id.* 550) imposed an *additional* duty of ten per cent. upon "Philosophical apparatus and instruments" generally, giving no exemption.

Under the pressure of war expenses, the act of June 30, 1864, c. 171, § 25, abolished the exemption which had been expressly given continuously from 1816, and imposed fifteen per cent. duty upon philosophical apparatus and instruments imported for the use of any society, etc. (13 Stats. 217.)

The former exemption was restored by the act of July 14, 1870, c. 255, § 22 (16 Stats. 268) to philosophical, educational, scientific and literary societies and to those devoted to the fine arts, but *not* to religious corporations, which had enjoyed it under the act of 1861.

Whether this omission (of the word 'religious') was intentional or accidental, the revisers felt bound by it; accordingly they incorporated antecedent legislation upon this subject (as they understood it) in this wise: Among the "Sundries" of Schedule M are placed:

"Philosophical apparatus and instruments, forty per centum *ad valorem*.

*Provided*, that any philosophical apparatus and instruments imported for the use of any society incorporated for religious purposes are subject to a duty of fifteen per centum *ad valorem* (R. S., 2d ed. p. 480.)

The Free List of the revision included

"Philosophical and scientific apparatus, instruments and preparations . . . . specially imported in good faith for the use of every society or institution incorporated or established for philosophical, educational, scientific or literary purposes, or encouragement of the fine arts, and not intended for sale." (R. S., 2d ed., p. 487.)

The provision of the free list of the act of March 3d, 1883, was identical with the above, except the word "religious" was interpolated between the words "for" and "philosophical society."

The fifteen per centum duty was taken off from importations of all the enumerated articles for religious societies and that of forty per centum upon the same, when imported as merchandise for sale, was reduced to thirty-five per centum—as noted at the outset of this brief.

The result of the foregoing full examination of all our legislation upon this subject is to show that, ever since these articles have been mentioned *eo nomine*, as subject to or exempt from duty, the sole discrimination has been as to the character of the importer and not to that of the particular article imported, of the designated class; *i. e.*, *provided* it was a philosophical instrument—whether common or rare, simple or complex in its construction, useful for professional or mercantile purposes, or those of common life, or merely abstractly illustrative of the principles of natural philosophy.

June 17, 1864, the proposition to tax these articles, when imported for educational societies being before the Senate, it was strongly opposed by Mr. Sumner, who said;—

"I believe that the education of our country would be advanced by stimulating such importations rather than by discouraging them. But there is no question

now of stimulating them. The proposition is to discourage them; because, when you impose this tax, it will be practically a discouragement."

The amendment imposing a duty of 20% was adopted by a vote of 18 to 16.

The House rejected it by a vote of 24 to 68; but the conference committee assented ultimately to a tax of 15%. (13 Stats. 217.)

Six years later, when the free list of the act of July 14, 1870, was pending, Mr. Carpenter, speaking especially as to books, maps and charts, &c., (which it was proposed to strike out of the bill which had passed the House) observed;—

"There are, by common consent, certain articles of importation which the government should encourage. That principle is sustained in this bill. The importation of bulls is a thing deserving of attention and premium by this government, for the multiplication of cattle; but the importation of books, for the multiplication of ideas and thought, it seems should be discouraged."

Mr. Fowler of Tenn. forcibly represented that scientific books (and the same is even more true of philosophical apparatus) were mainly for the benefit of students who were "the most self-denying, helpless, poor, earnest and laborious men in this country."

"Some poor man has knowledge enough to understand that there is a book [or instrument] that will be useful to him, and by hard work and toil and self-denial, denying himself day by day what other men use, he lays by enough to send for and get the book [or instrument] and bring it here, and he reads it and distributes it for the benefit of others. These are the kind of men who are to profit by bringing in these things free."

He concluded with the observation that these were poor men's pleasures, as well as work. Rich men in-

dulge in yachts, racers, blooded stock, etc.; exceptionally, only, in scientific pursuits.

Thirty-five per cent. contribution to the government ought to be sufficient from such a source!

We repeat that the discrimination is as to the character of the importer, and not to the specific use, except so far as the *intended* use may be assumed or inferred from the character of the importer, where an exempted corporation. A religious (or other specified) society can import any philosophical instrument free, and then do what it pleases with it; if a magic lantern or stereopticon, use it to exhibit pictures of the Holy Land to the Sunday-school, or any other pictures at a Fair. If once imported in good faith, the Church or College can sell any of its instruments to whomsoever it pleases, for any use whatever, without any liability to duty accruing. The fact that the privilege of free importation was restored to religious societies, after being once taken away, shows that it is not supposed that the importations will be entirely devoted to purely abstract scientific investigation.

We thus urge the proposition that *use*—whether purely scientific or also professional—is not the determining consideration, because the effort of the government (at the trial of the Chicago and Philadelphia cases, as well as of this) appears to have been to establish some such test; hence, we anticipate such a contention upon this appeal.

To us it seems that the difference between an educational use and an individual, personal employment of a philosophical instrument is indicated by the free admission in one case and the assessment of 35% in the other; and to insist upon a still heavier duty, upon the ground that the use of the instrument is not exclusively that of abstract science, is carrying the argument beyond any fair interpretation of the language and requirements of the statute, according to the ordinary rules of statutory construction. It concedes purely

speculative investigation, not directed toward practical results, an advantage it denies to those observations which, beneficial to science generally, are (or may be) incidentally so to the experimenter or to the subject of the experiment; as, for instance, the patient whose temperature is ascertained by a clinical thermometer. We believe that instruments of scientific research are best employed when directed toward some practical result that (if attained) will be useful to mankind, pecuniarily or otherwise. A far greater interest attaches to our observations of the heavenly bodies from the fact that the knowledge thus acquired is of incalculable advantage to commerce and navigation than would be the case if they had no direct relation to the daily affairs of life upon this planet.

Tariffs are designed to affect commercial transactions; and when that of 1883 imposes 35% duty upon philosophical instruments, etc., it means upon these appliances of philosophy when commercially dealt in, and thus put to a commercial use. If not an article of commerce in this country; *i. e.*, if bought abroad by or for an importer whose purpose is only to use them here philosophically, scientifically, religiously, or educationally, they are free; though, as an article of domestic commerce, they must be supposed ultimately to fall into the hands of those individuals who will put them to their natural use, which is philosophic.

Examining, now, each of the articles involved in the Collector's appeal, in the numerical sequence of their introduction as exhibits, and in the light of the testimony given as to each (omitting only immaterial and superfluous words), the appellees confidently expect it will be found that every one of them is entitled to entry at a duty of thirty-five per centum, as within the *statutory* meaning of the term "philosophical apparatus and instruments."

Ex. 1. A compound microscope; used for examining

very minute objects of all kinds which are invisible to the naked eye. There are various microscopes, differing in the degree of fineness in the lenses, and the number of lenses they contain. This is a compound microscope; that is to say, it contains a lens with an object-glass composed of a number of lenses arranged in a certain system, and also an eye-piece to make the images produced by the lenses clearer to the eye. This is neither the highest nor lowest kind of a microscope; a medium microscope. It is fitted for practical use in the investigation of small objects. Scientists usually use the highest power of microscopes in pursuing scientific investigations, although it is not absolutely necessary. This depends upon the objects to be examined. They do not always use the highest; frequently, a low power is more desirable. The best made microscopes are usually supplied with a variety of lenses, so that a person making an investigation can substitute a lower-power lens if he chooses. Exhibit No. 1 is a combination of three lenses, and it is undoubtedly adapted for high powers or low powers, as one may desire. By unscrewing the lens one part is removed, and the power is thus decreased. It can be unscrewed twice, and by that means you get a very low-power object-glass. By screwing the lens out again you get a higher power; but you could not tell by the looks of it what the exact power was. A low power gives a much greater surface of vision at one time than the highest does. A very high power enables us to see only a minute portion of the object; the reason being that, of an object magnified so much, only a part can be seen at a time; while the low power, not magnifying so much, takes in a larger field at once.

The box containing the microscope contains other parts, ex gr., a sort of trough, for examining fluids; a little cap, which covers up the fluid and keeps it in position, spreading it out and giving an even layer. This is an usual accompaniment of the microscope. This is another adjunct of the microscope, commonly called a "bull's-eye" lens. When an opaque object is being examined from a light in the mirror it throws the light up through, and can be used for obtaining an oblique illumination. Microscopists have occasion to use hand-lenses; *i. e.*, a single lens where they make the focus without any machinery; and it is an adjunct

of microscopes used not only by microscopists, but chemists and physicists in general.

Exhibits No. 1½ are microscope-slides for exhibit number one. (Record, 8, 9; fols. 24, 25.)

The microscope is an optical instrument used for the examination of minute objects by enlarging the visual pictures of them upon the eye of the observer. Not only its discovery but its improvement and its proper manufacture requires knowledge of that branch of philosophic science which is distinctively called "optics," treating of the nature of light, and of the laws of the *phenomena* of light and of vision.

The compound microscope consists of at least two lenses (Exhibit 1 had three: Rec. 9, fol. 24) so placed relatively to the object, to the eye, and to one another, that an enlarged image of the object formed by the lens nearest it (the object-glass) is looked at through the eyeglass; so that while through a simple microscope the eye looks directly at the object to be magnified, in the compound the eye observes only indirectly the object and directly looks at the enlarged image of it as magnified by the first lens.

Under the appropriate title, in Vol. XVI of the Encyclopædia Britannica, near the bottom of the second column of page 260, it is said of the compound microscope, that it has been

"developed in the last half century into *one of the most important instruments of scientific research* that the *combination of theoretical acumen and manipulative skill* has ever produced."

It would hardly seem questionable that the microscope, Ex. No. 1, is a philosophical instrument, pure and simple.

The same is equally true of Exhibit No. 4—an astronomical telescope mounted upon a tripod, "*designed*

*more particularly for examining stars and heavenly bodies.*" (Rec. 10, fol. 27.)

The testimony as to this exhibit (No. 4) was this;—

Exhibit No. 4 is an astronomical telescope, about three feet long, mounted upon a tripod. The witness testified that it was, in a certain sense, the reverse of a microscope; being an optical instrument for examining different [distant?] objects—stars, or anything of that sort. It assists the eye in two ways; first, in enlarging the angular vision and thus magnifying it; and, secondly, by collecting and directing the rays of light to the eye; *i. e.*, directing a larger beam of light to the eye than could be done without it. Telescopes are differently designed according to the distance or use to which they are to be put. *This exhibit is designed more particularly for examining stars and heavenly bodies*, and is an astronomical telescope. The witness thought his description practically covered all instruments which are used for seeing distant objects. (Record, 10, fol. 27.)

Exhibits numbered five and six are similar in construction to Exhibit 4, but are less powerful, and not expressly designed for stellar observation.

Therefore, Judge WHEELER submitted the question, as to their character, to the jury (under instructions not excepted to) who found both to be philosophical instruments within the meaning of the statute, upon examination of the exhibits themselves, in connection with the following testimony:—

Exhibit No. 5 is a telescope known as a field-glass. It is not especially constructed for astronomical purposes. Its main purpose is for viewing objects at a long distance, but not especially for heavenly bodies, although it could be used for some of the stars. It is used to gratify a laudable curiosity. It is used by seamen a great deal, and is of the general shape of a marine glass. (*Ib.* fol. 28.)

Exhibit No. 6 is a double telescope, or opera-glass, or field-glass—either one or the other—based upon the

same principle as the larger telescope. It is a telescope with low-power lenses, of achromatic range. The record makes the witness say it is constructed in such a way as to bring two concave-plano-convex glasses cemented together, and by that means to get a larger field of vision; but the principle is essentially the same as in the larger telescope. It is not especially adapted for astronomical purposes. It is used on shipboard and on land for the same general purposes that a single-barrelled glass is used.

It is too large and heavy for an opera-glass; it is an out-door glass. It is more convenient than the single-barrelled glass for certain purposes, because it is a smaller glass. It is sometimes carried in a pouch. Both No. 5 and No. 6 are used in viewing objects at a short distance, and are not adapted to astronomical purposes.

Comparing Exhibits 4, 5 and 6 witness stated that there was apt to be a little difference in the lenses between each. The lower power telescopes have achromatic lenses in them; that is to say, two or more plano-convex lenses joined together. That is done in order to obtain a larger and clearer field of vision for short distances, while in the larger telescope there is apt to be a different series of lenses, either convex or concave, and sometimes double convex. All these samples are adapted to view objects at a distance, and No. 4 is especially adapted for astronomical observations, and is mounted for that purpose. It is mounted on a tripod with universal joints so it can be turned in any direction, so that the object to be observed can be kept in the field of vision. The planets are constantly moving, and therefore the telescope has to be adjusted to follow the motion of the heavenly bodies, and it is so arranged. No. 5 is more of a hand instrument. It is not specially adapted for the examination of heavenly bodies, as the lenses are too weak for that; it is only used for a field-glass, or a glass for observing objects at a long distance—objects in general. No. 6 is a double telescope for the same purpose, only the lenses are not so strong. (Rec. 10, 11; fols. 28, 29.)

Upon our view of the law, and under Judge BUTLER's construction of this statute, we were entitled to have a

verdict directed in our favor as to these exhibits; since they are "such instruments as are designed to utilize certain laws of natural philosophy, and require for their manufacture special knowledge of these laws." (42 Fed. Rep., 212.)

They are based upon the laws of optics, and are useless unless constructed in conformity thereto.

But although the facts required a direction in our favor, neither we nor the appellants can complain that the cause was submitted to the jury if their verdict determines the matter in the same way that the Court should have decided it.

Brock v. Cing, 3 Jones L. 45.
Woodbury v. Taylor, *Ib.* 504.
Bernstein v. Humes, 78 Ala. 134.

Ex. 8 is a low-power microscope or magnifying glass on brass tripod. It is commonly used for examining grain and minerals and things of that sort, and is also used by *botanists and entomologists;* the lens is called "*the Coddington lens;*" the witness, *as a chemist and scientist*, has had occasion to use such a lens. This magnifying glass, mounted upon three legs, is used to examine the quality of grain; it magnifies the grain and shows up the defects if there are any, and is used for that purpose by dealers in grain. They use this instrument in their business. (Rec. 11, middle.)

Almost any instrument commonly and commercially known as a "microscope" should be judicially recognized as a "philosophical instrument;" especially where mounted, as this exhibit was, for convenience of use in its manipulation and in making investigations and observations.

"Microscopical examinations may be carried on by the aid of an ordinary, inexpensive microscope; but this, in the natural course of things, will give place to a more perfect instrument, and a complete list of accessories, provided the student becomes interested in the subject."

Hopkins' Experimental Science, 278.

It is an instrument requiring an applied knowledge of the laws of optics in its construction; being "an optical instrument for the examination of minute objects (or parts of objects) which enlarges the visible pictures upon the retina of the observer by the rays proceeding from them" (Enc. Brit.); used for scientific purposes; this exhibit being employed by botanists and entomologists in their study of nature; its botanic use doubtless suggesting its commercial use for an analogous purpose.

Its lens is one developed by close observation and investigation of the action and laws of light; called (after its promoter, not its originator) "the Coddington lens." It is a grooved sphere, the invention of Sir David Brewster, "and *when properly made* is almost free from spherical aberration, and the chromatic aberration is almost insensible" (Am. Cycl.), consisting of "a spherical lens, or sphere with a deep concave groove cut around it, so as to cut off the marginal pencils, and thus give a wider field and more perfect image." (*Ib.*)

It will be apparent fom this that it is not an article that any ordinary mechanic can make; but requires technical knowledge and skill in handling the sphere and cutting the groove to just the proper depth.

That, in the lapse of time, it is found adapted to, and is adopted for, commercial and utilitarian purposes does not deprive it of its philosophic origin and character. It is still a philosophical instrument, employed in the transactions of daily life.

Whatever were philosophical instruments, when that first became a statutory term, remain so to the legislative eye, unless a different meaning is declared by Congress.

The increasing application of the microscope and other philosophical instruments to the daily uses of life is observed upon in the introduction of a little book by Mr. Phin, "How to Use the Microscope" (A.D. 1890) from which we offer the subjoined copious

extract as expressive of our own views, upon this branch of the subject.

"It is also a fact to be regretted that heretofore the microscope has not been extensively employed in the arts, and in everyday life, simply because practical men have not been taught how to use it, and consequently have been unable to avail themselves of the advantages which it offers; but if carefully and judiciously selected, and properly handled, it is capable of affording an amount and kind of assistance which cannot be safely neglected. It may be made to aid in the examination of raw materials, and of the finer kinds of work; it will enable us to measure spaces which would otherwise be inappreciable, and this, in an age when even in ordinary machine shops the thousandth part of an inch is frequently an important quantity, renders it indispensable to the careful and skillful mechanic; on the farm it will enable the agriculturist to examine closely and minutely the various noxious insects and forms of fungi and blight and thus aid him in identifying them and applying the proper remedy; and in the examination of minute seeds, such as timothy, clover, etc., it will prove a very valuable assistant, enabling him to detect any inferiority in the quality, or any impurity or adulteration. Frequently the agricultural seeds offered in market contain minute seeds of offensive weeds, many of which are so small that they are not easily discovered by the naked eye.

Every farmer and mechanic knows the value of a good pair of eyes, and he also knows that an agent which doubles or trebles our power in any given direction at once confers upon us in that respect a superiority over our fellows. Very few men are twice as strong as their comrades; still fewer have three times the strength of ordinary men, and it may be safely affirmed that no man possesses the power of ten ordinary men. But a microscope of very ordinary capacity at once multiplies our powers of sight by ten, twenty, or even a hundred times, while those of the better class enable us to see things with a keenness and clearness which, when compared with that afforded by the naked eye, is as more than a thousand to one.

There are four distinct and important directions in which a microscope may be made to serve us: 1. It is capable of affording the most refined and elevating

kind of pleasure by the exhibition of objects of extreme beauty and interest. There are few more splendid sights than the gorgeous colors displayed by some objects when viewed by polarized light, and even the tints of certain minerals, and the brilliant scales of certain insects, when viewed as opaque objects, by means of a good condenser, surpass anything that is familiar to us in ordinary experience. On the other hand the exquisite beauty of form which is characteristic to most of the objects with which the microscopist concerns himself can be fully appreciated only by those who have seen them. As a sort of innocent amusement and pleasure, therefore, the microscope has few or no equals; for it may be safely affirmed that a five-dollar instrument is capable of affording gratification of greater variety and intensity, and of longer continuance, than that yielded by anything else of the same cost. . . . . Everything in nature and in art may be subjected to inspection by it, and will then disclose new beauties and fresh sources of knowledge. Under it the point of the finest cambric needle looks like a crow-bar, grooved and seamed with scratches; the eye of the fly is seen to consist of thousands of eyes; and the dust of the butterfly's wing appears to be what it really is, scales laid on with all the regularity of shingles or slates on a house; while to prepare and examine these simple objects requires no great skill and no elaborate apparatus.

2. As a means of imparting instruction to the young, the microscope has now become indispensable. The changes which of late years have taken place in the views held by our ablest men in regard to the best education are too well known to need even mention. No education that does not include a knowledge of natural science is now regarded as complete, and there is a very wide range of the most essential and practical knowledge that can be reached only through the microscope. Thus, when we look at a leaf with the naked eye, we see but a green mass of matter, possessing a certain beautiful form, it is true, but disclosing none of those organs which render it more complicated and wonderful than anything ever produced by our most skilful mechanics. Looked at by the microscope, however, this same leaf is found to be made up of innumerable parts, each one of which is highly complex

and beautiful; it is furnished with mouths for breathing, with cells for storing, digesting and assimilating nutriment, and with ribs for strengthening its structure; and all this, which is perfectly invisible to the unassisted vision, becomes distinct and obvious when we call to our aid a microscope of even moderate power. It is true that much of this may be taught by means of books, engravings and verbal descriptions, but every one knows that for distinctness and impressiveness the very best engravings fall far short of a view of the real object.

3. As an instrument of research, the microscope now occupies a position which is second to none. There is hardly any department of science in which a student can hope to reach eminence without a familiarity with the microscope. Botany and Zoology have been developed almost wholly by its aid, and so necessary is it in the study of these sciences, that Schleiden, one of the most successful of investigators says of it: "He who expects to become a botanist or a zoologist without using the microcope, is, to say the least of him, as great a fool as he who wishes to study the heavens without a telescope." In chemistry its services have been very important, and in geology and mineralogy it has opened up new fields of research which almost promise to revolutionize these sciences. Medicine has long acknowledged the microscope as one of its most efficient assistants, and in the practice of the best physicians it is regarded as an indispensable means of diagnosis in some diseases.

4. As an assistant in the arts. Its importance in this department is but just beginning to be recognized, and in a former paragraph we have endeavored to point out a few of the subjects to which it may be applied with good hopes of success."

Phin's "How to Use the Microscope," Introduction, pp. x–xiv.

"Exhibit No. 11 is a speculum or reflecting mirror. It is used for reflecting the light which is thrown upon it in various directions. It is *used as an illustration of the reflecting of light.* It is used also in some of the *larger* telescopes, the old-fashioned telescopes made a number of years ago, where the light was reflected.

The image of the object that was viewed was reflected from this mirror to the eye of the observer; after passing through the lenses in the usual way, the light fell upon a speculum of this sort and was then reflected to the eye. That is what is called a reflecting telescope. In this form *its principal use is in the illustration of the refraction and reflection of light*, and is an instrument found in a collection of instruments in schools and colleges, and has no particular, practical use that he [witness] is aware of. (Rec. 12, top.)

The direction of the Court, in favor of the plaintiff, was so imperative a legal necessity as to preclude discussion.

The next exhibit upon which plaintiff had a directed verdict was No. 15:

Ex. 15 is a stereopticon or magic lantern. Its peculiarity consists essentially of three parts; its case, the box containing the light; inside of it and in front of the light is a condenser consisting of one or two convex lenses, or more; then at the end is the object-glass, which modifies and projects the image of whatever is examined upon the screen. In this case the light enters from behind and is projected upon the screen in front. This instrument is used for illustrating lectures and instruction in colleges and universities, and for projecting pictures of different subjects upon a wall; it is also used in the illustration of natural science. (Record, 13, fol. 34.)

The use of the stereopticon is almost exclusively educational, as the testimony (upon which the Court was bound to act) states; and mainly in illustration of the facts of natural philosophy, as we all know.

So far as used for amusement, it is an effort to amuse by means of philosophic principles and appliances.

That it may sometimes be used for other, and commercial, purposes does not militate against our claim; any more than a telescope ceases to be an astronomical,

philosophical instrument when the owner places it upon the street-corner to be looked through at ten cents a peep.

Exhibits 16 are stereopticon slides belonging to Exhibit No. 15. The magic lantern is very often used as a toy; the smaller kinds are the more common kinds. That is merely a question of price. The question of material which enters into the construction of it is a consideration. The principle of action is the same. The same pictures which could be used in the toy could be used in the higher-priced ones; and this instrument is used in the illustration of natural science, and is also a toy—a child's ordinary magic lantern. *(Ibid.)*

This exhibit necessarily follows the fate of its predecessor, of which it is commercially a part.

May 1, 1880, the Attorney-General advised the Secretary of the Treasury that Harvard College was entitled to free entry of photographic slides for a magic-lantern, as "philosphical," etc. If a college can import them free, they are dutiable (when imported commercially) at 35%. XVI Atty. Gen. Op. 486.

Ex. 18 is a Grenet battery; that is, an electric battery *used for generating electricity.* It consists of a positive carbon pole and a negative zinc pole which is inside and is arranged to slide up and down when the battery is not in use. When the battery is not in use the zinc is lifted up out of the solution, and that stops all further action. When you want to use it again to start the electricity you press the zinc down. A vacuum is filled with bi-chronate of potassium dissolved with water and a little sulphuric acid. It is an electrical apparatus, and has one bad quality; that is, becoming polarized in a very short time. In other words, the zinc pole becomes coated with little particles of hydrogen, and that prevents all further action in the oxidizing solution and stops it. The battery is *used in laboratories* largely. Witness has used it in his own. It is *used almost exclusively as an experimental machine.* It *can not be used as a practical machine* on account of the

short time it runs. It becomes exhausted in a very short time. *Its main use is in the explanation of the laws of electricity.* (Record, 13, fol. 35.)

Protesting against any discrimination grounded upon use for telegraphing, or otherwise commercially, this evidence shows that exhibit No. 18 is, in its use, as well as its construction and operation, purely philosophical.

Ex. 20 is a Rhumkorf coil constructed on the following principle: Around a central core of soft iron is wound a certain number of turns of copper wire, each turn being insulated by a layer of paper or some other insulating material; then on top of this coarser wire is wound up in the same direction a large number of layers of very thin wire, each one likewise insulated by a layer of paper or other insulating material, and the fine wires connect with the two poles on top and the coarser wires connect with the lower, with the commutator from one pole to the other. This box is filled with what is called condenser; which is a series or number of plates of tin foil such as we find wound around tobacco. That stores up electricity somewhat on the principle of a Leyden jar, and keeps it stored, so that when a person uses it he gets as much greater shock than he would if the condenser were not there. That is used in schools and universities, and also by physicians, and by people who merely use it for their own amusement. It is used practically in colleges and universities *to illustrate electrical science*, and also by every one who has occasion to generate that kind of electricity. It is also used to explode mines at times, to explode dynamite cartridges, or anything of that kind. It may be used in connection with a battery. *It has no practical use in telegraphing. Its main use is for illustrating the laws of electrical induction.* (Record, 14 near top, fol. 36.)

Exhibit No. 20, like No. 18, is used only scientifically, in philosophical experimentation. Both are within any rule of determining philosophic character that has (so far as we can discover) ever been laid down, even by

the several attorneys for the United States at the trial of earlier cases; hence, in the absence of appellant's brief, we can not conjecture upon what *particular* ground a verdict was asked to be directed against us as to these exhibits; the *general* ground was to preserve all possible rights of the government.

That mines may be exploded by it does not extinguish its title to be called philosophical. Archimedes, applying his knowledge of optics and the nature of the sun's rays to firing the Roman fleet, by means of reflecting mirrors, was none the less a philosopher, utilizing for his purpose philosophic instruments, than if he had always abstractly speculated upon the laws of light, without practically making use of his knowledge.

Ex. 21 is a galvanometer, an electrical instrument used for measuring the intensity or strength of currents. It is a differential galvanometer, and is based on the principle of the magnetic needle. It deviates to the right or left, according to the intensity of the current passing through it. This is a small galvanometer used for testing the strength of batteries or other instruments. It is not scientific enough to be used for measuring the strength of currents; it merely shows whether the current is running or not. They are made of various degrees of fineness, and when of sufficient degree of fineness they are used in measuring the strength of currents. This is merely to tell whether the current is running at all. The degrees on the scale are merely to tell how far the needle deviates. The strength of the current is measured in proportion to the deviation of the needle. *These are used by scientists and are used also by electricians.* An instrument of that kind of that degree of fineness is *usually used in the laboratory.* If the galvanometer was of a better and more accurate kind it would have a better practical use in telegraph offices. This is not fine enough. (Record, 14, fol. 37.)

The observations made as to the preceding exhibit also applies to No. 21, except that the Attorney-General

will perceive from the evidence that it is 'philosophical' even according to his crucial test of "practical use"; as it does not explode mines, and is not adapted to use in telegraphy. It indicates the presence and activity of an unseen and almost unknown force, whose mysteries are just being displayed to scientific eyes, and of which this instrument aids in facilitating the investigation.

It has not the unphilosophic defect of being of "practical" use.

Ex. 22 is a Geisler tube *used by scientists* to examine the properties of sparks; for instance, of the Rhumkorf coil we have just examined, or any electric spark. It consists of a glass tube which is sometimes exhausted of all air, so you examine the spark in a vacuum. It is sometimes filled with other gases to examine the properties of sparks in gases. It is sometimes filled with liquid. It has *no practical use.* They are made of various picturesque and artistic shapes; some of them are very striking and give very pretty pictures in the dark (Record, 14 bottom).

Though said to have no *present* "practical use," this instrument is employed in tentative experimentation to determine, by the spark, the character of electrodes of different substances as to their respective adaptability for the transmission of the electric current; the intensity and color of the spark varying with the nature of the gas with which the tube is filled.

VI Am. Cycl. 508 (last ed.).
2 Knight's Am. Mech. Dict. 961.

Ultimately, "practical use" may be made of the facts thus ascertained; but this instrument will then be as purely philosophical as it is now, while its employment as yet remains in the region of speculative philosophy.

Ex. 24 is an anemometer, and is used for measuring the velocity of the wind. It is nothing but a wheel

revolving around its own axis, with a dial indicating the number of revolutions it makes; and of course it measures the velocity of the wind. It is *used in observatories* for that purpose. (Record, 15 top.)

This exhibit is used only to observe the phenomena of nature, and not at all the handiwork of man, or aught which his labor contributes to produce; though, by multitudinous recordings of these observations, simultaneously in observatories far distant from each other, it is no doubt hoped that some natural law may be discovered, the knowledge of which will be practically useful to man, in his various avocations, by sea and land.

If aught is ever accomplished in this direction, this instrument of its acomplishment will remain as purely philosophical as it is now.

"By means of this simple instrument, Dr. Lind, who invented it, ascertained the *force* of the wind at different *velocities*, by the height of the column of water raised by it." 1 Am. Cy. 489, *h. t.*
2 Ency. Brit. 24, *h. t.*
1 Knight's Am. Mech. Dic. 99.

Biram invented one to be used in mines, to prevent explosions; any inattention to the supply of fresh air being detected thereby; *(Ibid.)* but his instrument did not thereby become any less philosophical than Lind's.

"Anemometry now forms a most important feature in all metreological observations, and many important and valuable results have appeared since the invention of the self-recording apparatus." 2 Enc. Br. 26, *h. t.*

Without the aid of instruments, we observe that wind has velocity and power; but the anemometer enables us to measure and make comparisons of velocity and to ascertain the proportion between velocity and force, and to establish the law governing this relation.

The thing measured is not produced by human effort, nor subject to his will or control; although he may

learn to avail himself of its movement, velocity, and propelling force.

Exs. 25 and 26 are hygrometers. An hygrometer is an instrument devised for measuring the amount of moisture in the atmosphere. It consists of two thermometers; above one of them is wound a piece of silk with a small amount of cotton fastened to it and that dips into a vial containing water. The water, on evaporation, loses a certain degree of coldness and, consequently, one thermometer will be higher than the other, and by using tables for calculation the dew point can be determined, that is to say, the amount of moisture there is in the atmosphere. This description is of Exhibit No. 25. Exhibit No. 26 is undoubtedly based upon the same principle; the object or purpose of it is the same, and the sole object of either of these instruments is to obtain the degree of moisture in the atmosphere. *It is used to determine facts in meteorology and also in laboratories.* Witness has one in his own laboratory. The instrument is found in educational institutes *to illustrate the truths of natural science. They are* NOT *used by any other than scientific persons* and are not instruments of every-day use. (Record, 15; fol. 39.)

If instruments constructed to ascertain the force, pressure and velocity of atmospheric currents (that we may know their laws so as to utilize them safely, instead of being their sport) are philosophical; none the less so are those invented and applied to learn the relative humidity of these currents, at different times and places, and under all circumstances.

12 Enc. Br. 569, *tit.* Hygrometry.
2 Knight's Am. M. Dic. 1158.

"*It is scarcely possible to overestimate the importance of a knowledge of the horizontal and vertical distribution in the atmosphere of its aqueous vapor, for it may be truly said that it forms one of the prime factors in all the larger problems of atmospheric physics.*"

16 Enc. Br., 138, *tit.* Meteorology.
9 Am. Cy. 131, tit. Hygrometry.

When it comes about that every farmer, in haying-time, and his wife in her dairy, consult their hygrometer, as they now do the thermometer and barometer, all three will continue to be philosophical instruments applied to the common uses of daily life.

It affords a standard of humidity, and the means of comparison; but its chief claim to be called philosophical, according to the Government's theory, is that it has not yet been directly and practically applied to commercial or common uses—as the testimony states.

Ex. 30 is called a maximum and minimum thermometer, for recording the temperatures produced. One side records temperature during the day-time, and the other during the night. There are two little flues in each tube, consisting of a little steel wire held in position by a little head. As the mercury rises on one side it shoves the indicator up; then it goes down again, it leaves the indicator where it stopped rising and pushes the one on the opposite side up; and whenever the indicator stops it tells you how high or low the temperature was during the night. This is graduated on the Fahrenheit scale. *It is used principally by scientific people;* it may be used by others. Its sole object is to register permanently the highest and lowest points of temperature. There is no reason why it shouldn't be used by anybody. (Record, 15, 16.)

Manifestly, these instruments are employed in the scientific collection of data, from which to draw conclusions. The greater the number of observers and recorders, the wider is the generalization, and the more approximately correct the deductions therefrom. Somewhere, in his works or autobiography, we remember that Darwin lays great stress upon the enhanced value of observations of facts, pertaining to a given subject, by many, widely-separated observers.

But at present no direct, "practical use" can be made of the knowledge we acquire by this instrument, of the highest and lowest temperature of a day that is

past; wherefore, we suppose it will be conceded to be as "philosophical" as the philosopher's stone—which the philosophers tried hard to put to a pecuniary use.

Ex. 33, is a laboratory thermometer; used in *chemical laboratories* and *physical laboratories*; however, it can be used for any other purpose for which the ordinary thermometer is used. On account of its breakability it is *only used in laboratories*. (Record, 16 bottom and 17.)

The remarks made upon preceding exhibits apply equally to No. 33.

Though anybody *might* resort to it, to learn from it the story of atmospheric changes of temperature, it is the immaterial incident of its construction that only physicists *do* put it to use, in their scientific observations.

Exs. 37 and 38 are both aneroid barometers. They are used for the same purpose as the barometer, which is an instrument used for measuring the pressure and weight of the atmosphere. The pressure of the atmosphere varies according to the height the barometer is carried above the sea-level. It varies from time to time with the perturbations of the atmosphere. The barometer is used to indicate changes in the weather occurring out of those perturbations, and to measure heights. It is used for nothing else. *It is a scientific instrument when used for the observation of those phenomena*, to ascertain heights above the sea-level, and to forecast weather. (Rec. 17, fol. 44.)

These exhibits, and the next, are instruments constructed upon a knowledge of natural phenomena, for the purpose of observing them.

They are not operated by the hand of man (except in setting the indices for comparative observation) but are solely operated upon by the forces of nature. They are used for the compilation of scientific statistics from which deductions are to be drawn.

Ex. 39 is also an aneroid barometer. A great many

people have barometers in their houses as well as thermometers. They are used for the same purposes, as the gratification of curiosity. They are practical instruments on shipboard. They are needed more on shipboard than in the house; they form one of the adjuncts of a fully equipped ship (*Ibid.*).

What is said of the two next preceding exhibits may also be observed of this; whether they merely gratify a curiosity essentially scientific; or warn the traveller by land; or notify the sailor of the coming storm, that he may seasonably reduce his sail and take the necessary observations while the sun still shines;—its construction, adaption and employment mark it as philosophical.

When Galileo directed his inquiring opera-glasses toward the heavens, it was that through them he might gratify a laudable curiosity.

When Newton observed the falling apple, he was "curious" to know the meaning, the *law* of its fall; its velocity; and the ratio in which that increased, according to the distance traversed.

The gratification of curiosity has primarily led to nearly all the discoveries subsequently applied to the business pursuits of life.

Ex. 40 is a hydrometer. It can be used for any fluid, only it is hypothetically graduated on a particular scale—an arbitrary scale. It is a well-known instrument used by scientists and every one who wants to examine the specific gravity of liquids. It is graduated somewhat on principle of the scale of the Baume thermometer. It is not especially adapted to any one liquid. It is an ordinary hydrometer which can be used by any person. It is not delicately graded. It does not indicate the true specific gravity. It only measures an arbitrary specific gravity which you can convert by calculation into the true specific gravity. It is not more specially adapted to laboratory work than to any other work, nor is it more especially adapted to laboratory work than any other of the hydrometers that have been in evidence. The gravity of any liquid can

be taken with this instrument, while the others are specially designed for particular liquids. This has a wider scope. (Record, 17 bottom.)

We can but reiterate, as to this exhibit, in its different sphere and applied to other objects and subjects of inquiry, the observations made upon earlier numbered exhibits.

It is a daily illustration of the researches of Archimedes into natural phenomena, and the discovery and application to the observation of fluids of the law he announced.

9 Am. Cy. 124, *tit.* Hydrometer.

See the mass of facts ascertained (for subsequent application) indicated under this title in the Encyclopædia Britannica, Vol. 12 (New York, A. D. 1881) pp. 536 to 542.

2 Knight's Am. M. Dic. 1153, *h. t.*

Ex. 43 is a radiometer, *a scientific instrument used for no other purpose except to illustrate the radiation of heat and light.* It consists of a number of light mica discs suspended on a sharp wire; and one side of the mica disc is blackened; when a strong ray of light impinges upon that blackened surface—light or heat—it starts the whole thing revolving in the opposite direction. *It is of no use except for illustrating the radiation of light and heat.* (Rec. 18, fol. 46.)

As the "*practical* use" of this purely scientific and philosophic instrument has not yet been developed, we assume the government will consent to call it "philosophical." Should it now suddenly become useful in the commerce of every day, we should still assert its title to be so considered.

Knight's *New* Mech. Dic. (A. D. 1884), p. 735, defines RADIOMETER;—

"An instrument invented by Mr. Wm. Crookes for

demonstrating the *mechanical* action of *light*, and the conversion of radiation into motive-power.

According to Prof. Frankland, the movement is due to *heat*."

So this little instrument raises a question over which philosophers still disagree, and which nothing but laborious, continuous and multitudinous observations can determine—if these can—though the theory of Prof F. is generally accepted.

19 Ency. Brit. (N. Y., A. D. 1885) 249, *tit.* Pneumatics.

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CHARLES CURIE,
Attorney for deft. in error.

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Edwin B. Smith,
Of Counsel for Oelschlaeger.